





## Secretary Glickman

*U.S. Department of Agriculture*

“The challenge is to expand our educational programs in order to reach our diverse population. We need a unified, clear understandable message that will target those who prepare the food. The information must be translated into in-kitchen action that empowers the people to make their own critical contribution to safe food.”

“Food safety is an area where the American people believe that government performs a critical role in protecting the public health. They want to rest easy in the knowledge that the food on their plate is safe.”

“While the United States does more than any other nation to protect our food supply, we can no longer embrace the thought that meat and poultry inspections are enough. We also must call upon the American public to practice safe food handling and preparation techniques.”

“Lack of consumer awareness is a critical food safety gap that we need to help close. We see evidence of consumer interest from the more than 100,000 calls annually to our Meat and Poultry Hotline seeking basic preparation advice on all types of foods.”

“We are making history with new advances in meat and poultry inspections that rely on modern scientific methods. Now we must make the American public a partner in our efforts. Food safety education will play an increasingly critical role in our progress.”

## Secretary Shalala

*U.S. Department of Health and Human Services*

“Too many Americans still falsely believe that their own homes are safe havens from foodborne illnesses. Not enough are taking the necessary steps to eliminate them. We need to arm every consumer with simple lifesaving information and life-long habits they can pass on to their kids, their babysitters, and their friends.”

“When it comes to food safety, when it comes to foodborne illnesses that are costing us 9,000 lives a year, what we don’t know and what we don’t do can hurt us. It can hurt our parents; it can hurt our kids; it can hurt our country...indeed it already has. That is why we are really here today.”

“We need to create a clear, safe pathway between the farm and table. Every American must have confidence that their food is safe.”



# Changing Strategies— Changing Behavior

## WHAT FOOD SAFETY COMMUNICATORS NEED TO KNOW

On June 12-13, 1997 the first national conference devoted exclusively to developing innovative education programs that can change consumers' unsafe food handling behaviors was held in Washington, D.C.

The conference is one of many educational projects identified in President Clinton's food safety initiative to protect the public health.

More than 550 educators attended the conference representing industry, trade and consumer organizations; state and local health and agriculture departments; corporations; universities; and the Cooperative Extension system.

The conference provided a forum for participants to meet the shared challenge of food safety education through cooperative partnerships and to learn to design successful food safety education programs.

In addition to the formal presentations during the conference, there was also an opportunity for consumer educators throughout the country to demonstrate their successful programs during a poster session. Abstracts of these posters are included at the end of the proceedings.



# First Lady Hillary Rodham Clinton

*Following an introduction by Dr. Phillip I. Tarr, Mrs. Clinton warmly greeted participants and expressed her pleasure at being invited to speak at the conference.*

“Food safety...remains a shining example of what government can and should do on behalf of its citizens.”

“We are gathered here to talk about what can be done in a partnership that includes the government and the private sector—farmers, parents, teachers, grocery store owners, doctors, nurses, healthcare workers—to see to it that the food we eat does not make us—or our children—sick,” Mrs. Clinton said. “It does not get any more basic than that. American parents deserve the peace of mind that comes from knowing that the food they set before their children is safe.”

Mrs. Clinton spoke of her satisfaction with new safeguards and standards that have been put in place to protect the food supply. “Food safety is one of the best examples of how Americans have been able to unite in common cause to meet the challenges of their times,” she said. “It remains a shining example of what government can and should do on behalf of its citizens.”

Mrs. Clinton told of her experience in a fish packing house in Alaska while she was traveling after college. After packing fish that looked discolored and “mottled,” she said she asked the owner why they were shipping what looked to be spoiled fish. “What does it matter to you,” she said he asked. “It is all going to Japan.” After several more questions, Mrs. Clinton said that she was told she could leave and come back the next day to get her check. “When I returned the next day,” she said, “the entire operation was gone.”

Mrs. Clinton spoke of the five point action plan instituted by President Clinton and Vice President Gore. The plan calls for:

- an expanded nation-wide early warning system
- more expert disease “detectives,” with more technically sophisticated procedures such as DNA testing
- improved food inspection, including more inspectors for seafood plants
- an extension of hazard analyses and the critical control point approach to include fruits and vegetables
- strengthened coordination between agencies that have a role in protecting public health, including USDA, CDC, FDA, and EPA
- launch of a full-scale public education campaign about the dangers of foodborne illnesses

Mrs. Clinton also spoke of the Partnership for Food Safety Education, commending the public/private sector for working together to launch a full scale public education campaign about the dangers of foodborne illnesses.

She encouraged all food safety educators to make the message simple, understandable, and easy to remember, citing two of her favorite messages from Iowa State University: “If in doubt throw it out” and “Keep it straight, don’t cross contaminate.”

We have deprived many of our children of food safety lessons, said Mrs. Clinton of the growing trends toward prepared foods and eating away from home. “Lessons we learned helping fix meals stayed with us.”

“Educating Americans about how to handle foods is central to the success of our efforts,” she said. “The president has always believed that our food safety strategy must be built on two equally important foundation stones. One is, what can government do? The other is what you do on the front line—reach out to the public.”

In closing Mrs. Clinton advised that “we must be vigilant at all times. Many of us take safe food for granted.”



# What Do Consumers Want from Educators?

*Caroline Smith DeWaal*

“Consumers now must be reminded to treat food as contaminated. They want and expect safe food,” noted Caroline Smith DeWaal. “But we can no longer give out guarantees. We must be honest about risky foods, keeping in mind that almost all operators produce foods that are okay most of the time.”

DeWaal called for more safe handling labels on products such as eggs, unpasteurized apple juice, and raw shellfish. Even then, she warned, we can’t assume that people are getting the message. We must put the information into messages that truly affect their long-term cooking habits—it is no longer safe to eat raw cookie dough, eggs with raw yolks and rare hamburgers.

We also can’t pretend that the problems in the food supply can be solved with consumer-based solutions, she pointed out. Consumers are part of the solution, but not all of it. Citing examples such as *E. coli* 0157:H7 on lettuce and salmonella on alfalfa sprouts as situations that consumers can’t fix, DeWaal called for faster outbreak and illness identification, better science and technology, and smarter regulations.

“Harmful bacteria are evolving quickly and showing up in foods where we least expect them,” noted DeWaal. “It is going to take more than the best consumer education to address these problems.”

She advised all educators to avoid the subtle message that “any consumer who becomes ill failed in some way—that they didn’t adequately wash their hands or wash their vegetables, or cook their meat. The reality is that consumers are using techniques that have been safe in the past. The blaming the victim approach is not effective.”

Communicate in direct and humorous ways, she suggested, noting that there are many low-cost and free places to advertise. Use buses, trains, and public transportation where you have a captive audience. Use many languages. Keep the message simple and put it in many forms—signs, stickers, jingles, slogans. Consider focusing on children. They often will teach parents and others while developing their own life-long habits.

“Throw out everything you learned in writing 101,” she advised. “Repetition is good. Use visual words. Use pictures and graphics. Mix metaphors freely. Just get the message out.”

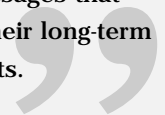


***Caroline Smith DeWaal***

is Director of the Food Safety Program for the Center for Science in the Public Interest. She represents CSPI in Congress and in the regulatory arena on such issues as meat and poultry safety, seafood safety, food additives, pesticides and sustainable agriculture, and animal drugs. Ms. DeWaal is the leading consumer analyst on reform of laws and regulations governing food safety, especially mandatory Hazard Analysis and Critical Control Points (HACCP) systems. She crafted the consumer/public health response to USDA’s proposed Pathogen Reduction/Hazard Analysis and Critical Control Points Systems rule, which will apply HACCP to meat and poultry processors. She also has filed comments on two FDA proposals to mandate HACCP systems to improve seafood and processed food safety.



We must put the information into messages that truly affect their long-term cooking habits.





## **Nancy Donley**

is President of S.T.O.P.-Safe Tables Our Priority. She joined S.T.O.P. in 1994 after the death of her only child, Alex, who died after eating hamburger contaminated with *E. coli* 0157:H7. She subsequently founded The Friends of Alex chapter in Chicago after being approached by numerous grieving friends and family members who were outraged by her son's death and wanted to be active participants in effecting much-needed change in the safety of the food supply. Her involvement is in dedication to her son: "Alex mattered and I will not allow his unnecessary death to be chalked up as an unfortunate statistic."



...We need to know exactly what we are dealing with and we must be given information in clear, no-nonsense terms.

# **Epidemiology of Foodborne Illness**

*Nancy Donley*

"Imagine a poison so powerful, so toxic that a single ounce could wipe out every man, woman, and child in the United States Upper Midwest," challenged Nancy Donley. "It sounds like something out of science fiction and indeed the autopsies of its victims read like something out of the X-Files."

In an eloquent recounting of her son Alex's illness and death, Donley described the effects of *E. coli* 0157:H7. "I tell you about Alex's story for two reasons: one is to convey the severity of the problem and the other is to remind you that behind every statistic is a face, a story, a life. The statistics grow exponentially when you consider that the victims leave behind grieving and broken family, friends, co-workers, and playmates."

She applauded the FSIS for its decision to discount the color of cooked hamburger as a measure of doneness. "They responsibly decided to base their message on sound science rather than sound bites. Consumers expect no less," she explained. "We want—rather we demand—the truth, the whole truth, and nothing but the truth."

"Consumers will not tolerate the onus of responsibility for a bio-hazard level-3 contaminant in our homes. We will not tolerate our children's safety being dependent on the employees in school cafeterias, fast food establishments, and restaurants—many of whom don't understand the ramifications of their actions or inactions. We cannot control the cleanliness of our kitchens down to a single microbe. And a single microbe of *E. coli* 0157:H7 is all it takes to kill a human being."

"Consumers can and should accept a responsible role for the safe handling and preparation of food for those foods when the pathogen can be safely diffused in our homes. But we need to know exactly what we are dealing with and we must be given information in clear, no-nonsense terms," she said.

Consumers must be able to conduct their own risk assessment and to do so they must be clearly informed of those risks, Donley explained. "There is a dangerous tendency by industry and public health departments to sugar coat messages in order to protect their market or avoid a public panic. Not only is this blatantly dishonest, but it puts consumer health and safety at risk."

Information is only as reliable as the messenger, reminded Donley. Consumers are more likely to adopt practices promoted by the USDA or CDC before they listen to information from industry.

Repeating the topic of the session, Donley provided her two word answer to what consumers want from educators: "The truth."



# Food Consumption Patterns and Food Handling Behaviors

Michael Sansolo

Consumers are changing, noted Michael Sansolo. They eat out as much as they eat in. With both parents working, many have only 15 minutes to prepare dinner. According to an article in USA Today, 47 percent of those surveyed say they have no time to cook, 18 percent have no desire to cook, and 5 percent don't know how.

"We have 70 percent saying they are eating out because they don't cook or don't want to cook. If they don't want to cook, how are we going to educate them about safe cooking," he asked. "This is going to be tough."

Sansolo explained that grocery stores are no longer a growth industry and regularly compete with restaurants. Repeating figures provided by Caroline Smith DeWaal, he noted that 46 percent of our food dollars are spent away from home. It also is now estimated that McDonalds serves 7 percent of the entire population every day.

Supermarkets are finding new trends in food sales. Home meal replacement (HMR) products—prepared foods—are increasing in popularity. With these products comes the need to educate workers on safe food handling procedures, and the need to see that HACCP principles are followed.

Consumers too must be educated on how to properly store, handle, and prepare the products. To do this, grocery stores are hiring more food service professionals to create educational messages for consumers.

In another interesting trend, Sansolo said that 10 percent of the food at home is now purchased electronically. Calling the internet a growth message medium, he also saw a potential for its misuse: "What if the internet is loaded with inaccurate food safety information?"

Out of each of these challenges is the opportunity to build trust, he said. "We have to seize the opportunity...and find a way to reach new consumers."

"Consumers are cynical, complex. Cynical in part because they have gotten so many messages they don't know who to trust. When we ask who they trust...they are more frequently saying themselves. Why are they saying this?" he asked. Then he speculated that there are too many conflicting messages from government, industry, and the media.

"We need to create a whole new partnership so the messages they get are consistent, clear, and direct," he said. "Our job...is to get the right messages out there, to engage in the right debate, and to keep taking this debate to a new level."



## Michael Sansolo

is group vice president of the Food Marketing Institute for industry relations, education, and research. For 11 years, Sansolo worked with *Progressive Grocer*, traveling from Maine to Hawaii, interviewing and reporting on the supermarket industry. In addition, he worked on nearly all of the significant studies and reports done by *Progressive Grocer*, including the Annual Report of the Grocery Industry, the Marsh Super Study, and the recent reports on ECR and Category Management. Sansolo became editor-in-chief, vice president of *Progressive Grocer* in 1989. In March 1990, he was awarded the Jesse Neal Award, the equivalent of the Pulitzer Prize for business writers.

“  
Food safety is not  
a consumer objective.”



# Epidemiology of Foodborne Illness

*Frederick J. Angulo*

## **Frederick J. Angulo**

is medical epidemiologist, Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention. He also is the Project Officer of the CDC/USDA/FDA Foodborne Diseases Active Surveillance Network (FoodNet). He is author or co-author of three book chapters, 27 scientific manuscripts in peer-reviewed journals and presenter at more than 70 national and international conferences. Angulo received his Ph.D. in epidemiology with a biostatistics minor from the University of California Los Angeles in 1994. He received a Masters in Preventive Veterinary Medicine (Epidemiology) in 1984 and a Doctorate of Veterinary Medicine in 1983, both from the University of California, Davis.

“Consumer education can be done in the face of much uncertainty. We know the golden rules already about foodborne disease and we should just move forward with those rules.”

Foodborne disease is changing, according to Frederick Angulo, who noted four factors responsible for these changes:

- newly identified pathogens, such as *E. coli* 0157:H7
- newly identified routes of transmission, such as *salmonella* in eggs
- newly identified vehicles, such as *cyclospora* on raspberries
- indentifying new consequences of illness, such as HUS shigella toxins as the most common cause of HUS and Guillan-Barre syndrome linked to *campylobacter*

“In other words, foodborne diseases are becoming increasingly complex, [which] reflects the increasing complexity of the food industry,” explained Dr. Angulo. “Outbreaks are now multi-state and interstate due to our distribution network. These increasingly complex foodborne disease outbreaks reflect our complex production network and our increasingly global food supply.”

We don’t need precise estimates to know that the number of foodborne illnesses are increasing, he noted. “We have the information we need to provide public health messages and to intervene on the farm and at the processing level.”

Dr. Angulo cautioned that many people don’t recognize the symptoms of foodborne illness. Many times the symptoms that people associated with the 24-hour, 48-hour, or stomach flu, are in reality due to a foodborne illness. Because of this misperception, he noted that many cases of foodborne illness are not reported. Only the most severe cases are investigated and forwarded to the CDC.

“Clearly we need better surveillance—not to count the cases, but for the various public health interventions that can be derived from the improved surveillance. In order to improve surveillance, we need a better, improved infrastructure at the local and state level,” said Angulo.

He built a pyramid in order to illustrate the reporting structure:

Contact CDC  
Laboratory Analysis  
Physician Gets Stool Sample  
Individual Seeks Care  
Population as a Whole

We need the general public to begin recognizing foodborne illness, and then for physicians to recognize the symptoms and order the necessary tests to identify the pathogen, he noted, before we can even begin to count the number of cases. At the top of the pyramid, he said, “There is a microbiological lab revolution that will provide new techniques to identify new foodborne diseases.

“Consumer education can be done in the face of much uncertainty. We know the golden rules already about foodborne disease and we should just move forward with those rules,” Angulo said.





# Epidemiology of Foodborne Illness

*Peggy Nunnery*

Peggy Nunnery reported on first-year data from the FoodNet. FoodNet is a program launched by USDA, FDA and the CDC to gather information on foodborne illness at specific sites. Surveys are also used to help identify food products and consumer behaviors that may contribute to foodborne illness. The following data was collected from approximately 10,000 consumers at these five sentinel sites: California, Connecticut, Georgia, Minnesota, and Oregon.

Nunnery noted that they are in the process of revamping the survey questions and will be adding two additional sentinel sites: New York and Maryland. The results should be available later this fall.

The results of the survey follow with demographic information.

1. When buying ground beef, have you ever noticed the safe handling label?

Yes	5,058	58%
No	3,420	39.9
Not Sure	88	1
Refused	6	.1

**Total 8,562 100.0%**

**13% said they never buy ground beef; Asians were the least likely to buy ground beef**

2. Have you ever read the safe handling label?

Yes	4,390	87%
No	608	12
Not Sure	50	1

**Total 5,048 100.0%**

**More women than men said yes; 92% of mothers with children under the age of 10 said yes; Asians were least likely to say yes**

3. As a result of the safe handling label, have you changed the way you handle or cook ground beef?

Yes	1,690	38.5%
No	2,648	60.3
Not Sure	52	1.2

**Total 4,390 100.0%**

**More women than men said that they changed their behavior; respondents in their 20s and women over 60 were least likely to have changed; Hispanics and Blacks were more likely; those with the least schooling were less likely; income made no difference**

4. Do you wash your hands after handling ground beef?

Never	263	3.1%
Sometimes	673	7.9
Almost Always	1,389	16.4
Always	6,098	72
Not Sure	39	.5
Refused	6	.1

**Total 8,468 100.0%**

**More women than men wash their hands; mothers with children under the age of 10 were the most likely; men aged 50-60 were most likely to say never**



## **Peggy Nunnery**

is director, Food Hazard Surveillance Division, Office of Public Health and Sciences, Food Safety and Inspection Service, USDA. She directs a system for tracking information about foodborne illness through passive and active surveillance, analyzing information to identify trends, assessing the impact of foodborne illness on the public, and evaluating Agency intervention efforts to control the incidence of illness and injury. Ms. Nunnery oversees the maintenance and administration of two major databases that direct Agency microbiological and chemical sampling programs. She received her masters degree from the College of William and Mary.





5. Did you sample any raw ground beef during meal preparation in the last 5 days?

Yes	130	5.6%
No	2,184	94.3
Not Sure	1	.1

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<b>Total</b>	<b>2,315</b>	<b>100%</b>
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5% said they allow their children aged 2-9 to sample raw ground beef; 8% allow their children ages 10-19 to sample; teen males and those with no schooling were the most likely to taste raw ground beef

6. What is your usual way of ordering a hamburger in a restaurant?

Rare	162	1.9%
Medium-Rare	786	9.2
Medium	1,512	17.7
Medium-Well	1,555	18.2
Well Done	4,374	51.2
Not Sure	143	1.7
Refused	7	.1

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<b>Total</b>	<b>8,539</b>	<b>100.0%</b>
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13% said they never ordered hamburgers in restaurant; respondents who had the most schooling and the least amount of schooling were more likely to order the hamburger rare; 83% of Black respondents order well done compared to 46% of Whites; Whites and Asians and those who live in urban areas were most likely to order rare and medium rare; those who lived on farms never ordered rare

7. Do you consider a hamburger that is cooked to have any pink in the inside?

Yes	2,282	27.7%
No	5,895	71.7
Not Sure	50	.6

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<b>Total</b>	<b>8,227</b>	<b>100.0%</b>
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Men were more likely to answer yes; 28% of those with the most education said yes; 92% of Blacks said no; Asians were most likely to say yes

8. Would you send a hamburger back if it was pink on the inside?

Yes	4,762	78.1%
No	900	14.8
Not Sure	427	7
Refused	6	.1

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<b>Total</b>	<b>6,095</b>	<b>100.0%</b>
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Women were more likely to send the hamburger back; most educated were least likely or didn't know if they would return it





9. When served a hamburger in a restaurant, do you cut it to check how it is cooked?

Yes	3,217	67.6%
No	1,505	31.6
Not Sure	40	.8

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<b>Total</b>	<b>4,762</b>	<b>100.0%</b>
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**Respondents with the most education most often said no; women were more likely to look**

10. Did you eat chicken in the past 5 days?

Yes	3,182	83.9%
No	600	15.8
Not Sure	11	3

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<b>Total</b>	<b>3,793</b>	<b>100.0%</b>
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11. Did you wash your hands after handling raw chicken?

Never	148	2.2%
Sometimes	398	6
Almost Always	856	12.9
Always	5,225	78.4
Not Sure	35	.5
Refused	2	.0

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<b>Total</b>	<b>6,664</b>	<b>100.0%</b>
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**Respondents in their teens and 20s were least likely to wash their hands; women washed their hands more than men; mothers with children under age 10 were most likely; men aged 40-60 were least likely to wash**

12. Do you wash the cutting board after cutting raw chicken?

Never	174	2.7%
Sometimes	285	4.4
Almost Always	459	7.0
Always	5,551	85.2
Not Sure	44	.7
Refused	3	.0

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<b>Total</b>	<b>6,516</b>	<b>100.0%</b>
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**Women were more likely to wash the board than men; mothers and fathers with children under age 10 were most likely to clean the board**

13. In the past 5 days, how many times did you eat food from a fast food restaurant?

1	2,427	24.5%
2	1,397	14.2
3	751	7.6
4	281	2.8
5	372	3.8
6	52	.5%
7	23	.2%
8	24	.2%
9	2	.0%
10	45	.5%
11	1	.0%
12	5	.1%
15	14	.1%
Not Sure	22	.2
None	4,477	45.3
Refused	4	.0
<b>Total</b>	<b>9,897</b>	<b>100.0%</b>

Average number of visits was two; for adults the average number of visits was 1; respondents in their teens and 20s ate out most often; 68% of respondents over 60 had not eaten at fast food restaurants during the period; men were more likely to eat fast food than women; Blacks ate fast food most often

14. Did you eat raw shellfish in the last 5 days?

Male	Yes	94	2.3%
	No	4,076	97.7
	Not Sure	3	.1
<b>Total</b>		<b>4,173</b>	<b>100.0%</b>
Female	Yes	71	1.4%
	No	5,057	98.6
	Not Sure	1	.0
<b>Total</b>		<b>5,129</b>	<b>100.0%</b>

Respondents in their 20s, men, and Asians were most likely to respond yes; those with incomes of \$100,000+ were most likely to say yes; location was not a factor

15.	Did you drink unpasteurized milk in the last 5 days?		
Male	Yes	79	1.8%
	No	4,322	98.0
	Not Sure	11	.2
<b>Total</b>		<b>4,412</b>	<b>100.0%</b>
Female	Yes	66	1.2%
	No	5,482	98.7
	Not Sure	7	.1
<b>Total</b>		<b>5,555</b>	<b>100.0%</b>

**Those that said yes were most likely to live on a farm or be American Indian**

16.	Did you drink apple cider in the last 5 days?		
Male	Yes	452	10.3%
	No	3,911	89.4
	Not Sure	11	.3
<b>Total</b>		<b>4,374</b>	<b>100.0%</b>
Female	Yes	457	8.3%
	No	5,060	91.6
	Not Sure	6	.1
<b>Total</b>		<b>5,523</b>	<b>100.0%</b>

**Those most likely to say yes lived on a farm or were under the age of 20**



### **Jean Buzby**

is an agricultural economist with the Food and Consumer Economics Division of the Economic Research Service, USDA. Since 1993, Dr. Buzby has focused her research efforts on microbial food safety issues and agriculture policy. She helped develop cost-of-illness estimates that were used by USDA's Food Safety and Inspection Service in their final rule on pathogen reduction/Hazard Analysis and Critical Control Point (HACCP) systems in federally inspected meat and poultry slaughter and processing plants. Dr. Buzby received her masters and doctorate degrees from the Department of Agricultural Economics at the University of Kentucky.

# **Epidemiology of Foodborne Illness**

*Jean Buzby*

The total estimated costs for *E. coli* 0157:H7 and six other pathogens is \$6.6 to \$38.2 billion, according to estimates prepared by USDA's Office of Economic Research Services (ERS). "We want to stress that although these costs are in billions of dollars, they are still underestimated," said Jean Buzby, who presented the data.

The ERS analyzed the annual costs of selected illnesses associated with meat and poultry. The cost estimates were used by the Food Safety and Inspection Service to represent the benefits of the new meat and poultry inspection system, according to Buzby.

"Foodborne illnesses impose an economic burden on society in terms of medical costs, lost productivity, pain and suffering, and a whole host of other costs," Buzby explained. "Controlling pathogens can reduce these costs. However, controlling pathogens also imposes costs on food producers and other members of the food marketing chain."

The first step to determining the costs of foodborne illnesses, Buzby said, is to find the best estimate of the annual number of foodborne illness cases and deaths associated with a particular pathogen. "At this point we look at both food and non-food sources, such as person-to-person contact and swimming in contaminated water," she said. The data comes from CDC and the Litchner and national databases.

The next step divides medical cases into three categories: those who don't seek medical attention, those who visit a doctor, and those who are hospitalized. With this data, medical costs are estimated, Buzby said.

To estimate the cost of lost productivity, the data is divided into three outcome categories: those who recover and return to work, those who never return to work, and those who die prematurely. "For those who miss a few days of work, we use average weekly earnings to represent lost productivity," she explained. "For the second and third category we use Landfeld and Suskins estimates of premature death."

"The total estimated costs are simply the sum of medical costs and lost productivity costs," she said. "We don't estimate other costs such as pain and suffering here."

According to Buzby, the estimated costs of foodborne illnesses are then determined by multiplying the total estimated costs by the best percentage of cases associated with a foodborne illness.

Using *E. coli* 0157:H7 and the associated HUS complication of kidney failure as an example, Buzby took the audience through the steps. The figures used are hospital cases with final outcomes. She noted that ranges are used because of the uncertainty of the data. Consequently, cost estimates also are in ranges.





Buzby's figures showed that 20 percent of acute illness cases are hospitalized. Of those, 20 percent get HUS, 9 percent of whom will develop life-long kidney failure and require dialysis and possibly transplants. There are 200-500 acute illness deaths, plus possible deaths caused by dialysis and transplants.

Using these figures, she estimated that the total cost of the *E. coli* 0157:H7 pathogen to be \$.4 to \$.9 billion dollars from foodborne and non-foodborne sources combined.

Assuming that 80 percent of the cases were from foodborne sources, the cost would be \$.3 to \$.7 billion annually. Again she stressed that these figures are underestimated because they have a narrow focus.

"Foodborne illness costs for *E. coli* and six other pathogens, using the Landfeld and Suskins conservative methodology are \$6.6 to 14.6 billion," Buzby said. "If you use a less conservative methodology where a premature death is valued at \$5 million, then total cost estimates are \$20.1 to \$38.2 billion. Combined, the range is from \$6.6 to \$38.2 billion." She noted that the \$5 million value came from labor market studies that other agencies have used when looking at regulations.

In qualifying her figures, Buzby noted that there is no consensus on how to value premature deaths. ERS tends to use conservative measures, and costs are incomplete in that they only looked at seven pathogens, although more than 40 pathogens are known to cause human illness.

The figures also did not take into account the majority of secondary complications. "Researchers estimate that up to 3 percent of all foodborne illnesses cause some kind of secondary complication, such as arthritis," she said.

"More research is needed to narrow the information gap," Buzby said. "We need more research on the annual number of foodborne cases and associated deaths and foodborne disease severity to improve our estimates."

**Foodborne illnesses impose an economic burden on society in terms of medical costs, lost productivity, pain and suffering, and a whole host of other costs.**



## **Alan Levy**

is Chief, Consumer Studies  
Branch at FDA, Center for Food  
Safety and Applied Nutrition.

# **Overview of Consumer Studies of Food Safety Knowledge, Attitudes, and Behaviors**

## *Alan Levy*

"To the extent that consumers don't view foodborne illness as a particularly serious kind of illness, they will not feel great urgency to change their behavior to avoid it. And they will be harder to convince that they need to change their behavior," stated Alan Levy, noting the relevance of the consumer's perception of foodborne illness to the possibilities of education.

Most consumers have major misconceptions about foodborne illnesses, according to Levy. They essentially are unable to identify foodborne illness when it occurs. The overwhelming majority identify gastronomic distress without fever with food illnesses, when most are likely to cause fever. They also expect the illness to develop immediately, when most incubation periods are 24 hours or longer. Finally, few felt that a doctor's visit was necessary.

Another obstacle to food safety education, Levy explained, is the idea that food contamination occurs because "someone else, not me, screwed up." Overcoming this attitude is a major hurdle to getting people to change their behavior.

Levy acknowledged that publicity about outbreaks has increased consumer awareness about foodborne illness. The sharp reaction is localized, however, and of limited duration. As an example, he cited focus group work with oyster eaters in Florida. Those who continued to eat raw oysters acknowledged that they were aware of the risk of *Vibrio vulnificus*, but felt they were taking necessary steps to remove the risk. They used their own strategies, such as determining the best place to buy and eat oysters, to protect themselves. They considered themselves experts on the risk, even though place of purchase is not a factor that limits risk.

"You can get a disconnect between knowledge, concern, and behavior when people consider themselves experts based on their assumptions that they have good information, when they don't," said Levy, referring to the oyster study.

Levy stated that he found consumer inconsistencies a troubling sign. "[There is an] absence of the usual and expected relationship between concern, knowledge, and behavior. Normally, greater knowledge about an issue is associated with greater concern and more appropriate...behavior.

"When we compare the relationship between basic individual [identifiers], such as sex, age, education, preferred information sources, and recent foodborne illness experience with food safety knowledge, concern, and behavior, however, we tend not to find these kinds of expected behaviors.

"In trying to educate consumers today about food safety, we are not dealing with naïve consumers who have never heard about food safety problems. Instead we are dealing with people who have considerable knowledge and experience with food who already employ familiar and tested coping strategies," he said.

As an example, Levy told about restaurant patrons surveyed who did not want to be reminded about risks when ordering. They found the proposed menu labels repulsive and said they already knew too much to get any benefit from them.

Citing research data from telephone surveys conducted in 1988 and 1993, Levy said that consumers were increasingly concerned about food safety, but during the same period unsafe food handling practices also increased. The same data showed that the public believes that foods prepared at home are much safer than foods prepared at





restaurants. Most experts consider the opposite to be true.

Other key results of the study showed that older people have the best food handling skills, but are the least knowledgeable and least concerned about risks. Younger people have the most knowledge and concern about risks, but continue to eat risky foods and display risky behavior. More educated consumers are more likely to eat risky foods and show no better food handling procedures than less educated consumers.

People who say they get “a lot of information” about food safety from news stories do not have better food handling or risky food consumption practices, but they are more likely to have greater concerns about food safety in general.

The one variable found, Levy said, that had a consistently positive effect on knowledge, concern, and behavior was the experience of a foodborne illness. After a foodborne illness, concern and knowledge about food safety increased and handling practices improved.

“Presumably a foodborne illness experience challenges any sense of being expert about avoiding foodborne illness,” he said. “There should be ways to challenge consumer’s sense of expertness without actually making them sick.”

Levy explained that this attitude, in part, might be due to the public internalizing the message that the United State’s food supply is safe. “Confidence in this system remains high in this country. But one of the consequences of this confidence is that food safety problems are seen to be systemic problems to be fixed by strengthening the system of controls and by government actions, not necessarily a problem that requires changing personal behavior.

“The challenge of communicating effectively to the public on food safety is considerable. We need to know what the public in general, and population segments in particular, already know about various food safety issues. We need to distill food safety advice into a few simple messages that can be delivered effectively. But we also need to understand how people think about food safety, he said, “...how they respond to food safety education messages and news stories, and how they process new information about food safety.”

#### **Results from telephone survey in 1993:**

- 50% left frozen or cooked foods out at room temperature for more than 2 hours
- 33% failed to wash their hands, knives, or cutting boards with soap after handling raw meat or chicken

#### **Where do most people get information about food safety?**

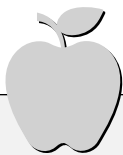
1. news stories; electronic and print media
2. package labels
3. cookbooks

#### **Who do most people rely on for food safety information?**

Between 1988 and 1992 consumer reliance on food labels and government information dropped. During the same period reliance on news stories and cookbooks increased.



“Consumer’s conceptions of food safety risks not only conveniently put the responsibility for food safety on someone else, they are surprisingly inconsistent and unrealistic as well.”



## **Susan Conley**

is the Director of Food Safety Education and Communications Staff of the Food Safety and Inspection Service, USDA. As Director, she oversees the agency's public outreach and communications activities, which include media relations, an extensive constituent liaison program, and many consumer education initiatives such as the USDA's Meat and Poultry Hotline. Ms. Conley has been with the Food Safety and Inspection Service (FSIS) for 12 years. Between 1985 and 1995, she served as Director of the Meat and Poultry Hotline. In fact, as one of the original home economists to staff the Hotline when it became a toll-free service, Ms. Conley took the very first call.

“These basic messages will provide the framework for a joint food safety education program.”

# **Presentation of Food Safety Education Principles**

*Susan Conley*

“It is not enough that we as educators decide what consumers should do and what they should know. Just because they are informed and aware doesn't mean they'll act on the information,” explained Susan Conley.

She cited her experience: People call our Meat and Poultry Hotline with a question and then call back with the same question for a different food. “We need to get principles across to them so that they can apply the same principle to another food or situation. We must find a message that the consumer can internalize.”

And to do this, Conley explained, a group of food safety educators representing the government, industry and consumer organizations identified the steps consumers go through when handling food. They tried to identify the critical control points of safe food handling in the home. Once this list of food handling behaviors was developed, it was put into a format that microbiologists, public health officials, government officials, and academicians involved in food safety could use to rank the food handling behaviors importance in terms of preventing foodborne illness. The process resulted in four behaviors that were considered most important.

Conley said that once this process of identifying the most critical safe food handling behaviors was completed, the goal was to develop consumer messages. Think about it, she challenged: “You only have 30 seconds—and the reality is you probably have less than 30 seconds of a consumer's time. What is the most important thing you'd like to convey to them about food safety?”

To put together a 30-second message, the government has worked with a team of educators to identify basic messages based on the characteristics of bacteria and the four main principles of food handling: hand washing, food handling, proper cooking, and cross contamination. The results will be taken to focus groups.

“Focus groups are critical to this process. If we are going to get information about how to change these folk's behavior and how to motivate them to do something different, we have to understand what their thinking is,” she said.

The goal is to come up with a few messages that encompass the food handling steps which are simple, doable, and practical, according to Conley. If the message is not practical, consumers will ignore it. We have to find a message that consumers will hear, internalize, and act upon. How to get that message to the consumer is key. You have to reach populations who are most at risk and least likely to change. To do this, you must understand their values and what will motivate them to change.

Four principles are:

1. Keep hands, surfaces, and utensils clean.
2. Don't cross-contaminate.
3. Cook foods thoroughly.
4. Chill foods promptly.



# Persuading the Public to Take Serious Food Risks Seriously... & Trivial Food Risks Trivially

*Peter M. Sandman*

Too often, the public is afraid of the wrong risks, noted Peter Sandman. Defining risk as hazard plus outrage, he noted that generally when the hazard is serious the public is apathetic and that the least dangerous hazard often generates the greatest outrage.

Looking at the second example, Sandman acknowledged that people are good at understanding risk data when they really want to. The key is to work with their outrage to make them want to hear or acknowledge the extent of the hazard. "Too often experts focus on the hazard and ignore the outrage while the public focuses on the outrage and ignores the hazard.

"Outrage is real. You cannot dismiss angry people and frightened people as just outrage because the outrage is as real. It's as real as the hazard; it's as measurable as the hazard; it's as manageable as the hazard. It's as much a part of risk as hazard," he said.

"I would argue that risk people, safety people, and health educators generally do a pretty good job of talking about hazard and we do a pretty good job of managing hazard in our society. We do a crummy job of talking about outrage and managing outrage. It comes as no surprise therefore that when we are in trouble, when people are angry with us, the problem is usually not a hazard problem, but an outrage problem."

When people misperceive hazard it is often because they are outraged. Without addressing their outrage, he explained, you can't mitigate the hazard. "When people are behaving irrationally in hazard terms, analyze what they are doing in outrage terms. Figure out why the outrage is high and what you can do to lower the outrage," he advised. "You can't explain to people who are really frightened or really angry that they are being silly. Deal with the fear and the anger first and then come back and explain the difference."

To mitigate outrage, Sandman advises following these six strategies:

1. Stake out the middle ground rather than the extreme. Do not exaggerate.
2. Acknowledge prior misbehavior. Take moral responsibility—not necessarily legal responsibility. Say you feel terrible. Admit things that might be embarrassing.
3. Acknowledge current problems. Take the public through the good and bad solutions so they are participants. Don't solve your problems and then announce success.
4. Discuss achievements with humility. If you lie about your motives, you cast doubt on your behavior.
5. Share control and be accountable. Make people feel safe by putting them in the position of control. Let them take the credit.
6. Bring the concerns to the surface—subtly. It's the concerns that the public are not voicing that make the most trouble.



## ***Peter M. Sandman***

Creator of the "Hazard + Outrage" formula for risk communication, Peter M. Sandman is the preeminent risk communication speaker and consultant in the United States today. Dr. Sandman has worked on communication aspects on a wide range of environmental problems and his clients have encompassed an equally wide range, including among others the Environmental Defense Fund, the Chemical Manufacturers Association, and the U.S. Environmental Protection Agency. A Rutgers University faculty member since 1977, he founded the Environmental Communication Research Program (ECRP) at Rutgers in 1986 and was its Director until 1992. Now based in Massachusetts, Dr. Sandman retains his academic affiliations as Professor of Human Ecology at Rutgers and as Professor Environmental and Community Medicine at the Robert Johnson Medical School. He received his Ph.D. in Communication from Stanford University in 1971.





**Too often experts focus on the hazard and ignore the outrage while the public focuses on the outrage and ignores the hazard.**

A good gauge to follow, he noted, is that if you feel outrage you are probably mitigating the public's outrage.

After looking at how to mitigate outrage, Sandman turned the tables and looked at how to generate outrage.

Turn the strategies around, he advised. Exaggerate (within ethics) to build outrage. Another easy way to make individuals aware of personal risk is to get them angry at someone else for taking the risk. For example, parents were encouraged to be angry at the nutritional quality of school lunches as a way to make them more aware of the nutritional content of the foods they serve at home.

He also noted that people often get outraged when they perceive that they are being protected. Likening it to when we were young and got mad at our parents for not letting us take risks, he suggested as an example telling consumers how to cook in addition to explaining the hazard. "Consumers know how to cook and generally will get angry if you tell them how to do something they already know about."

"When outrage is low, people collect information and create a scenario why they are not at risk," he explained. "We look for reasons why we are not at risk. One of the implications of this is that if you want to convince us that we are at risk, you have to know what story we are telling ourselves about why we are not at risk. You have to acknowledge that story before you can answer."

One effective way to do this is to offer choices. Say we demand that people do X. We encourage Y, but permit Z. You get more compliance with Y when there is an X and a Z.

In a sense, you have to diagnose why people aren't protecting themselves before you can talk them into it, he explained. Most often their failure to take advice is cultural. It does not fit their traditions or upbringing. Sometimes it is due to a lack of training. They just don't understand the requirements. It almost never is due to the fact that the information is wrong.

Keeping this in mind Sandman advises, "You ought not demand zero risk. It seems to me that I am going to decide how I live on data you give me and the relationship we establish. You are there to help the consumer decide. You need strategies that will let you come as close to the public as you can. You have two choices: hedge your bets and get improvements—or demand perfection and get nothing."



# Social Marketing and Food Safety Education

*This panel of six social marketers took a topic—preventing foodborne illness associated with summertime grilling—and applied the principles of social marketing to find a message and approach. During the discussion, they presented taped interviews with individuals cooking outdoors at Rock Creek Park, a popular family picnic area in the Washington, D.C. area. They also presented data compiled by the firm of Porter Novelli.*

Social marketing is the application of marketing principles to social initiatives to achieve goals through behavior change. “The important emphasis is on behavior change,” said Sharyn Sutton, panel moderator.

As social marketers, we focus on the desired behavior change and then figure out what attitudes and knowledge factors must be dealt with to achieve that behavior change, she explained. We work with three basic truths:

1. scientific reality—the “facts” of the situation
2. consumer’s reality—what they believe, how they act, and what they think
3. the above two realities don’t interact

These truths lead us to use both qualitative research and more traditional quantitative information, explained Sutton. Qualitative research comes from interviews with real people. It tells us how people think, who they are, and what they believe in. We don’t need a random sampling of x-number of individuals from around the country. Twenty people who engage in the behavior can be a sufficient number of interviews.

We apply our information to the Consumer-based Health Communication (CHC) process, which is a set of six steps:

1. Who is the target audience? We look for a person, an individual—not demographics.
2. What is the action? What do we want the consumer to do after they receive the message?
3. What are they already doing that is not the correct behavior? What do we have to change? What are the competing behaviors?
4. What is the benefit we are providing the consumer if they make the change?
5. What is the support? What information will we need to make the promised reward real, credible, and possible?
6. What are the reasons why the consumer will get this benefit? (As the consumer, fill in the blanks: If I do this new action I will get this benefit because \_\_\_\_\_.)

You must be able to answer all six questions or you are not ready to go ahead with an educational campaign, said Sutton. “You must have a target. We are always told that the public is our target, but there is no such thing as the public. The public is comprised of a lot of different segments that are very different.”

In addition, the benefit (with an emphasis on one benefit) must be clearly defined, noted Sutton. “What [individuals] care about is subjective. Do they believe [the benefit]? Do they perceive it? If they see it as a substantive benefit, then you have a benefit. Rewards do not come from public health benefits.”



## **Sharyn Sutton**

is a recognized leader in the field of social marketing and public communication. As co-developer of the Consumer-based Health Communication process (CHC), she has established a strategic approach for social interventions that is science-based and consumer-oriented. Dr. Sutton has 20 years experience in strategic planning, consumer research, and communication services. She is most noted for the national 5 A Day campaign. Dr. Sutton is a faculty member of the American University School of Communication, where she is developing an Institute for Applied Social Marketing. She received her graduate degrees in Psychology from the University of Maryland.

## **Alan R. Andreasen**

is Professor of Marketing and Associate Dean for Faculty at the School of Business at Georgetown University. He also is a Visiting Fellow at its Center for Food and Nutrition Policy. Dr. Andreasen is a specialist in the application of marketing to nonprofit organizations, social marketing, and the market problems of disadvantaged consumers. He is the author or editor of 11 books and numerous monographs. Dr. Andreasen holds Ph.D. and M.S. degrees from Columbia University.





### **William A. Smith**

is Executive Vice President at the Academy for Educational Development. He is responsible for initiating AED activities in the area of behavioral science and social marketing. Dr. Smith is widely published on the application of behavioral science and social marketing to large-scale public health interventions. He was deeply involved with CDC in their behavioral science reviews of community planning, and was one of CDC's principle TA providers in the area of behavioral science and social marketing. He is adjunct professor at the University of South Florida School of Public Health and serves on the editorial board of the *Journal of Health Communication*.

### **Ed Maibach**

is Director of Research and Social Marketing Strategy at Porter Novelli in Washington, DC. Dr. Maibach has been assistant professor in the Division of Behavioral Sciences and Health Education and Director of the Center for Health and Risk Communication at the Emory School of Public Health.

### **R. Craig Lefebvre**

is Chief Technical Officer and Vice President, Health Communications at Prospect Associates, a health communications firm in Rockville, Maryland. Dr. Lefebvre has authored more than 50 publications on social marketing and related subjects. He also serves as associate editor of the *Social Marketing Quarterly*.

Two additional factors impact on the message: vision and image. "From a marketing point of view, it is more important to understand the consumer and when the consumer will be open to the message, explained Sutton. "We need to pay attention not to how to reach them, but when will they take [the message]."

We also need to find the feelings, emotions, and signals that will tell people that we are talking to them. As an example, Sutton cited the fact that some individuals will not listen to government's or big businesses' messages.

As the first step in getting to know their audience, the panel presented a 10-minute videotape of interviews with real people who cook outdoors in the summertime. The elderly, young, couples, mothers, and representatives from different ethnic groups told the marketers why they thought they weren't at risk for foodborne illness. They also offered their thoughts on safe food handling and preparation techniques.

Responses ranged from "I'm not at risk because I know the grocery store where I shop" to "The key is to have a real hot flame, then you know it's going to be okay." To the question would you use a meat thermometer, people replied with blank stares, even laughter. "Just not feasible. What are you going to do, stick it in every burger?" replied one individual.

As the next step, the marketers examined the quantitative data. Since 57 percent of men said they frequently cooked outdoors in the summer, the panel decided to target men. The data also revealed that 66 percent of the men had a low concern for germs.

With these and other facts, the panel came to these conclusions:

- Men with low-germ concerns needed to build awareness and information
- Men with high-germ concerns were more contemplative and possibly more ready for the message
- Older men were not responsive and, in fact, suggested targeting first timers

In summary, the panel decided that older men may not be as open because they have a history. The decision was made to go back and run data on younger men. "The process bounces back and forth when you find a dead end. You don't know an audience the first time you run through the data," explained Smith. "You get better questions each time."

The panel next looked at the action. One suggestion for getting men to use meat thermometers was the idea of including low-cost throw-away thermometers in packages of hamburgers. "Marketing folks look for benefits, not ways to scare people. We would rather say, 'It's easy and fun, so why not try it,'" Smith said.

"We are so drenched with our own data and the self-perceived importance of our issues, that we don't realize that it's not a matter of convincing or selling people our ideas, but basically looking at the consumer and looking at the consumer's reality and figuring out how we can make their reality serve the public health's needs," explained Sutton.



Looking at the data again, the panel discovered that 78 percent of the men want to be seen as a leader and that most consider themselves risk takers.

With this new information, the panel made the following speculations and comments:

- Health and longevity are not necessarily of interest to the targeted audience
- They might change for their children
- How can we make thermometer use a part of being “cool”

With this new information, suggestions included promoting the fact that leaders use thermometers; it is a high-tech, crafty thing to do; chefs and the best barbequers use thermometers; make it a part of showmanship.

From the interviews the marketers knew that using thermometers was not considered a reasonable behavior. The questions they asked themselves were: “How can we reposition this behavior to be in the image of what these men feel about themselves?” “Where will they be open to this image?”

One suggestion was at barbeque cook-offs. Could they get the best barbequers and chefs to agree to use thermometers at public cook-offs? The panel felt that this might appeal to the leadership desire in many of the men.

The panel agreed that after answering all the steps, it is necessary to run the educational message by the target audience. “Constantly go back to the target group of 20,” commented Smith, “not 50 focus groups balanced across the country.”

“Everything we’ve said is to make the point that it’s all about the audience. It’s not about us as public health institutions and our science-based recommendations, as much as it is about the audience and understanding their perspective,” explained Craig Lefebvre.

“The key outcome of the whole process for us is to design programs that are relevant to the consumer. If they are not relevant, they are not going to be effective. Also, marketing process is a data-driven process, but there are times when we have to get something out there—learn from the experience. Don’t wait until everything is perfect. It takes too much time,” said Ed Maibach.

“We want to be careful about trying to make perfect cooks,” said Alan Andreasen. “Pick up a few simple things to move the process down the road.”

In summary, Sutton said, “It takes time for the message to get out and into the culture. Too many messages in a short time frame is confusing and might make both the old and new message ineffective.”



**All the science in the world doesn’t mean diddly if we can’t present it in the reality of the consumer.**

*Sharyn Sutton*

**Getting into the data means getting into the head of the consumer.**

*Alan Andreasen*





### **E. Ann Peterson**

is a Preventive Medicine Resident, Department of Family Medicine, at Emory University, Atlanta, GA. She also assess “tools” and methods available for evaluation of community health initiatives at Carter Center’s Interfaith Health Network. Her projects with the Georgia Department of Human Resources, Division of Epidemiology and Prevention, include research and design of a chitterlings intervention, shigella outbreak investigation and policy design, and evaluation of Olympic STD surveillance. Dr. Peterson received her Masters of Public Health from Rollins School of Public Health/ Emory University School of Medicine in Atlanta, GA. She received her Doctor of Medicine from Mayo Medical School, Rochester, MN.

## **A Social Marketing Intervention for African Americans**

*Ann Peterson*

*Beginning in 1989, metro Georgia became aware of two peaks in cases of a severe form of diarrhea in African-American infants caused by the bacteria yersinia enterocolitica (YE). The peaks occurred around the holidays in November and December and had been associated with the traditional preparation of chitterlings (pork intestines or chitlins), although the children were too young to eat the food themselves. In 1989, an informational intervention was conducted, including flyers and short lectures designed for dissemination through Women, Infant, and Children (WIC) clinics in the metro area. The intervention emphasized hand washing and the need to protect children (remove them from home) from exposure to chitterlings while they are being prepared.*

*The trend in the number of cases was followed at one hospital, which regularly cultures for YE bacteria in all cases of diarrhea. A study done in 1996 showed that yearly winter peaks of cases were continuing despite the WIC-based intervention. Dr. Ann Peterson reported on the 1996 intervention program conducted with her associate Dr. Jane Collier in concert with the Georgia Microbiology Department Office of Minority Health and the Georgia Department of Human Resources Epidemiological Prevention Office.*

In August 1996, we decided to try a social marketing approach to prevent the next holiday outbreak of chitterlings-associated YE diarrhea cases, reported Peterson. We reviewed literature and conducted phone and personal interviews with pork producers and food safety experts from USDA, FDA, and CDC. We found that YE bacteria is unique in that it grows well in cold temperatures and will grow on plastic and other surfaces.

Community focus groups and interviews were conducted in a retirement center, a clinic waiting room, a grocery store, and at churches. “We elicited preparation and hygiene practices, cultural views of chitterlings preparation, and age-related handling practices,” she said. The findings were that there are strong cultural traditions surrounding chitterlings preparation and that many of the preparers are older African American women who, as grandmothers, often are caregivers for infants. They became the primary target audience.

Focus groups and interviewees were asked to answer two questions: “How do you think the bacteria is being transmitted to the small babies?” and “What could we do to prevent this transmission?” The women identified varying hygiene breaks as the likely method of transmission.

Following up on the hygiene breaks, Peterson said she asked participants to describe various preparation methods. Two methods they used were identified which had the potential for preventing disease transmission: washing chitterlings in a low concentration of bleach-water during the hours of cleaning and preboiling chitterlings for 5 minutes before cleaning.

A microbiological study was done on levels of YE bacteria in traditionally prepared chitterlings and in chitterlings samples taken after implementing the two preparation methods. Commercially prepared chitterlings were not tested because they are 3 to 5 times as expensive as other types. We took into account competing costs and the social norms when we considered potential interventions, said Peterson. The cost of prepared chitterlings was prohibitive to our target audience. Also, she said, “Interventions changing traditional practices suggested from outside the community are unlikely to be accepted.”





Only home preboiled chitterlings grew no bacteria of any kind in any of the samples and met the necessary health criteria of killing bacteria in the chitterlings. “Preboiling removed the potential of transmission in the refrigerator and around the kitchen during and after the cleaning process,” reported Peterson. From these results the intervention chosen was “Preboil your chitterlings for 5 minutes before cleaning and cooking as usual.”

To sell the message, Peterson took the preboiled chitterlings to the community for taste tests. Preboiled chitterlings were found to be indistinguishable from usual preparation methods.

With this realization, she said, we had a message that gave “ownership” of the intervention to the community. It did not change their traditions and, in fact, came from their own preparation methods. Furthermore, the preboil message required the removal of children from the house for only the five minutes of preboiling and kitchen clean up, not the extended periods of time suggested before.

The promotional materials included flyers, cartoon flyers and stickers, brochures, a case history, public service announcements, news releases, and television news features. Grocery stores placed flyers above the chitterlings.

“In planning the diffusion of these materials, it became clear we had two other target audiences as well: healthcare providers and a heterogeneous group of gatekeeper/community leaders,” said Peterson. “The desired actions, barriers, and benefits were different for these groups than for chitterlings preparers and so additional materials were designed to address these two target audiences: sub-group specific cover letters, a medical fact sheet, and personal and/or phone presentations to decision makers.”

From mid-November to the end of December, the promotion was implemented with market penetration increasing weekly as gatekeepers gave permission and facilitated information dissemination. During the post-intervention period there was no corresponding Christmas peak in foodborne illness as there had been in previous years and overall, cases were lower this year than last despite increased surveillance by doctors. “Time was a limiting factor,” Peterson said, noting that the intervention did not start until mid-November after some families had already begun their holiday preparation.

The message was liked by the target audience it was designed for, said Peterson. “Talk with the target audience. The best answers often come from them.” Also, she advised, think about the gatekeepers early and plan materials specifically for them.



“

**As a holiday food, it was important that home cooking of chitterlings could still be part of the holiday preparation and that the preparation method came from traditions already being practiced by the community.**

”





### ***Odonna Mathews***

is vice president, Consumer Affairs for Giant Food, Inc., a Washington, D.C.-based super-market chain serving Virginia, Maryland, the District of Columbia, Delaware, New Jersey, and Pennsylvania. Her responsibilities include developing consumer programs and keeping management informed of changing consumer concerns and issues. Her department also has responsibility for handling all customer communications for the company. Ms. Mathews has a Masters degree in Business Administration from the University of Maryland where she majored in marketing.

“Consumer trust is a fragile thing.”

## **Retail-to-Consumer Education**

*Odonna Mathews*

“Giant has a strong commitment to listen to our customers,” said Odonna Mathews of her company’s long-standing practice of learning from consumers.

Giant has found television and radio spots to be the most effective ways to reach consumers, reported Mathews. Their spots are short, conversational, and offer practical advice. “Twenty-five percent of our budget is dedicated to public service-type messages, such as the need to wash hands.”

During the past year, Giant has started a weekly column that appears in their newspaper advertisements. Several have focused on food safety issues. “We try to help consumers understand the difference between quality and food safety issues,” she said. As an example, she explained that the expiration date on foods is not safety information but a use-by date.

At each of the company’s stores, customers can pick up many brochures that deal with specific topics from the Seafood Guide to the Eaters Almanac to the Food Keeper, which includes guidelines for how long foods can last. Another brochure, Be a Safe Food Handler is available at many places in the store, she said. In addition, signs with specific messages—freeze or use meats within 48 hours—are also hung over the appropriate foods throughout the store.

Mathews noted that Giant has an active quality assurance program that stresses prevention, HACCP principles, and employee training. Consumer specialists also focus on food safety issues. The company receives more than 350 calls a month on food safety and nutrition.

Speaking of Giant’s educational programs, Mathews noted that the message has to be simple, actionable, and repeated over and over. “By the time we are sick [of the message] we have just begun to reach consumers,” she said.



# We Wish You Well

*Carolyn Raab*

The University of Oregon and the USDA's Cooperative State Research and Extension service undertook an educational program aimed at foodbank volunteers and recipients. "Our goal was to help people make informed and responsible decisions about food safety and quality," reported Carolyn Raab.

Called "We Wish YouWell," the program had three objectives:

- to increase adoption of recommended food handling practices
- to increase adoption of practices that protect the safety of the food supply
- to increase the knowledge of food safety public policy issues

Volunteer staff from the cooperative extension office were trained. They in turn trained foodbank personnel. Training focused on proper methods for receiving and storing donated food, explained Raab. "Evaluation showed some knowledge change. Of the trained personnel, 56 percent did some new behavior."

As part of the outreach to foodbank recipients, 4,500 bags were distributed to Women, Infant, and Children (WIC), Head Start families, and FoodNet homemakers—a total population of approximately 13,000 individuals. Inside the reusable plastic bag were:

- a sponge on which was printed the message "Keep It Clean"
- a pot holder on which was printed the message "Cook It Well"
- a magnet on which was printed the message "Cool It Soon"

The messages were reviewed as the bags were handed out, said Raab, although she acknowledged that no volunteers spoke Spanish so communication with some families was difficult.

Follow-up contact showed that 73 percent recalled at least one of the messages. Foodbank recipients particularly liked the magnet. FoodNet homemakers liked the hot pad and sponge. They tended to recall the message about "Keep It Clean." Teen mothers who received the bag remembered all the messages, possibly due to prior message exposure, according to Raab.

She noted that the results were mixed because some of the audience were in fact certified food handlers that had been laid off and felt they already knew the information. Others did not have kitchens, so the kitchen items were not useful. Also, the volunteers were not really the right people to talk to the recipients, she said. Not all saw themselves as educators.

Raab reported that the program's successes were reaching new audiences, strengthening ties with the foodbanks, and increased goodwill with the recipients. "The messages were subliminal," Raab said.



## **Carolyn A. Raab**

is professor, Nutrition and Food Management at Oregon State University. She also is an Extension Foods and Nutrition Specialist. A licensed and registered dietitian, Ms. Raab also is certified in Family and Consumer Sciences. She received her Ph.D. from Virginia Polytechnic Institute and State University with a major in Human Nutrition and Foods.

**The messages were non-threatening and reinforced practices.**





### **Michael J. Diskin**

has worked in public health for more than 15 years. He is recognized as a Registered Sanitarian by the National Environmental Health Association and is a Certified Health Officer in Pennsylvania. During the past 10 years, he has managed the Food Protection Program of the Allegheny County Health Department where he presently holds the position of Assistant Chief. He was the principle author of the winning entry of the 1993 Samuel J. Crumbine Consumer Protection Award given annually to the best local food protection program in the nation. Mr. Diskin received his Master of Public Health degree from the University of Michigan.

Brownie had clout. He had entree into doors previously closed.

## **“Brownie” the Burger**

*Mike Diskin*

“The media lit a fire under Brownie,” said Mike Diskin, describing the Brownie the Burger mascot and program that focused on hamburger safety starting in May 1996. Back when the message was to cook hamburgers until they were brown in the middle, Brownie the Burger was a big hit with children in Allegheny County, PA.

“He had clout,” said Diskin. “He had entree into doors previously closed.” It helped that he also had a slogan that children remembered: “If I’m pink in the middle, I’m cooked too little.”

The Brownie the Burger campaign was a partnership program with Giant Eagle, a grocery chain, the Pittsburgh Pirates baseball team, Martin Outdoor Advertising, which donated 10 billboards, and the Allegheny County Health Department.

As part of the campaign, Allegheny County made *E. coli* a reportable disease as of June 1, 1996.

The program targeted four audiences: school-age children, preschoolers, and the elderly, and chronically ill. “We knew that the majority of cases of *E. coli* had been children under 12,” Diskin said.

While the song, slogan, and Brownie were popular with the kids, the campaign also included a more comprehensive message for parents: the symptoms of *E. coli*, the importance of washing hands and utensils, to cook burgers to 155 degrees or until they were brown in the middle and the juices ran clear, and to use clean plates, not the ones that held the raw burgers.

Brownie the Burger was everywhere, said Diskin. In addition to the billboards, he was on the sides of buses on major bus routes and received media attention. Brownie made 100 public appearances in parades, festivals, childcare centers, and schools. He also traveled in the mobile community van throughout the county.

In mid-summer Brownie visited day care centers and met with 20,000 children teaching them to sing a popular childrens song with new lyrics—“If it’s pink in the middle say ‘no way!’ If it’s pink in the middle say ‘no way!’ If it’s pink in the middle then your burgers cooked too little. If it’s pink in the middle say ‘no way!’”

Forty-four school districts and parochial schools handed out the stickers, magnets, coloring books, and parent information. The coloring contest attracted 5,000 entries. “The only requirement was that the burger be colored brown,” noted Diskin.

The final activity was a Pittsburgh Pirates baseball game and pre-game barbeque featuring Brownie the Burger. Giant Eagle donated tickets for the winners of the coloring contest. During the game, when Brownie was cavorting with the Giant Eagle mascot and the Pittsburgh Pirate mascot, the kids in the stands were chanting, “Brownie, Brownie!” remembered Diskin.

Since the campaign began, there have been no confirmed cases of *E. coli* in Allegheny County, despite the fact that reporting is now mandatory. Awareness of the food safety campaign among children was 77%; among parents 81%. Awareness of the food safety message among children was 84%; among parents 92%.

In terms of behavior changes, 62% of the parents reported changing their behavior. Among kids, 82% said that they check their burger before eating it; 92% tell someone if there is pink in the middle; 94% won’t eat a burger that is pink.



# The Chef and the Child Foundation

*Pat Thibodeau*

The mission of the Chef and the Child Foundation (CCF) is to address the dietary needs and nutrition education needs of and for children in America, explained Pat Thibodeau. CCF is the philanthropic arm of the American Culinary Federation (ACF), which has 35 chapters and 105 apprenticeship programs around the country.

CCF offers several programs. Color Me Safe, a food safety coloring book developed with USDA, has reached more than 30,000 children. As part of the programs, chefs visit in their white uniform and tall chef hat. They always bring more hats for the children, Thibodeau explained. "We have found that the hats empower kids to teach at home and children can teach parents better than we can." She noted that chefs at hospitals were some of the first to call and request the coloring books.

We are a natural partner for food safety educators. "When we create partnerships, we look for groups with identical goals" she said, noting that every community must answer its own questions in terms of how to address local needs. "We are the feet. We are the grassroots in the community."

While the primary focus of CCF is hunger, they also promote hunger awareness and food safety training. "When we began to teach nutrition we realized we must first teach food safety," Thibodeau said.

When CCF works with a group of children, they also will adopt the organization, such as the school or day care center. We will work with the staff and make recommendations to improve the facility if they want us to, she explained.

Other CCF programs include cooking classes for students in grades 2 through 5. The program includes safe food handling and preparation activities and grocery shopping. "We find that 85% of children this age do something at home to prepare meals," said Thibodeau. She noted that they are working with an industry partner to develop cookbooks for the students and with two industry partners to create a food safety program.

"We're parents with young children and we are eager to work in the community," Thibodeau said of the ACF chefs who work in CCF's programs. "Our goal is happy, healthy children."



## ***Pat Thibodeau***

is a chef certified through the American Culinary Federation (ACF). She is executive director of The Chef and the Child Foundation (CCF), a nonprofit charity outreach of the ACF. CCF works through ACFs 25,000 members in 300 chapters throughout the United States to provide local grants, nutrition education for children, and training for nonprofit feeding programs. As culinary apprentice and sous chef for Sea World of Florida, she developed Orlando's first food rescue program. Ms. Thibodeau has worked in the area of social services for more than 20 years with organizations such as The Salvation Army, the Division of Corrections State of Florida, and as certification director of a large inner city Food Stamp program.

“When we began to teach nutrition we realized we must first teach food safety. Food safety is first.”





### **Mary Miller Levy**

directs the Consumer Information Center (CIC) Publications and Media Division, which includes CICs programs to develop helpful consumer publications and to obtain media coverage and promotion of federal information. Ms. Levy oversees the production of CICs award-winning, annual television public service advertising campaign, as well as print and radio public service programs. She is responsible for initiating and managing CICs cooperative publishing program that received a 1992 Special Distinction award from the Society of Consumer Affairs Professionals in Business (SOCAP). She is a Phi Beta Kappa graduate of the University of Maryland.

“When government and industry work together it is a winning situation.”

## Consumer Information Center

*Mary Levy*

The innovative cooperative publishing program of the Consumer Information Center (CIC) encourages the federal government and the private sector, including foundations, trade associations, and individual companies, to collaborate and create timely consumer publications, according to Mary Levy, director of CIC's Publications and Media Division.

To date, more than 130 publications have been produced cooperatively for nationwide distribution by CIC.

“When government and industry work together it is a winning situation,” Levy said. CIC can offer lower development costs, enhanced quality, a broader consumer base, and expanded distribution. Their current catalog includes publications by 40 agencies and 80 cooperative titles. The CIC, located in Pueblo, CO, handles more than 40,000 pieces of mail each week enough to warrant its own zip code and mail trucks.

Centralized distribution is a definite advantage, according to Levy. CIC distributes 16 million copies of its quarterly catalog. It also posts selected pamphlet text on its electronic bulletin board and can customize a marketing plan/strategy with national media outlets. Public service announcements (PSAs) too, are part of their promotional efforts. “Federal and private clients have equal exposure,” noted Levy.

The cooperative partnership agreement requires that the publication be free of advertising and not copyrighted. After a title is published, CIC will track distribution, analyze who is ordering, look at how the publication is faring against similar publications, and gather public opinion, Levy said.

As a case study, Levy cited a recent publication about food safety and kitchen sanitation sponsored by FSIS, CIC, and Lysol. CIC provided staff support as well as the marketing and media plans. The publication costs were paid by Lysol. As a result of the partnership, 50,000 copies of *How to Help Avoid Foodborne Illnesses in the Home* are now available from CIC.



# Local Partnerships

Lynne Isaacs

Lynne Isaacs reported on a number of cooperative programs aimed at consumer education and public participation.

- The Nashville, TN, Department of Agriculture and Cooperative Extension Office, along with the District FDA office, developed a formal training program for new food businesses to teach them how to comply with federal, state, and local regulations and food safety handling laws.
- The Orlando District of the FDA, along with the Florida Department of Health developed a *Vibrio vulnificus* teaching kit that includes camera-ready copy, a brochure, and slides. Future updates will be sent to anyone responding to the reply card.
- The Orlando District of the FDA, along with the March of Dimes developed a folic acid teaching kit with a Governor's Special Grant.
- An Elder Education partnership, a sustained 4-year-old effort, focuses on food safety facts for seniors. It uses senior volunteers to encourage the reading of safe food labels, disseminate information on FDA and USDA issues, and then evaluate the methods and results. It has a county focus and participate in local events, such as the Strawberry Festival. Large-print brochures are available. Partners in the program include Elderhostel, AARP, and cooperative extension department volunteers. The program recently received a Hammer Award from Vice President Gore.



## Lynne Isaacs

is the public affairs specialist for the U.S. Food and Drug Administration, Southeast Region, based out of the Florida District Office in Orlando. She coordinates consumer and health professional education programs, public participation outreach, and public affairs training. Ms. Isaacs serves as the Regional Health Fraud Coordinator, the district AIDS & Special Health Issues Coordinator of the FDA District Office, and is the Regions representative on the Agencys National Customer Service Implementation Team. She also founded the Florida AIDS Health Fraud Task Force and serves on the executive board. Ms. Isaacs is a graduate of the University of Minnesota, College of Human Ecology. She is registered as a Certified Family and Consumer Scientist by the American Association of Family and Consumer Sciences.

“This is what reinvention is all about.”





### **Sara J. Lilygren**

is senior vice president, Legislative and Public Affairs, American Meat Institute (AMI). AMI represents companies that produce 70 percent of the U.S. beef, pork, lamb, veal, and turkey products and their suppliers throughout North America. It is the nation's oldest and largest meat and poultry trade association, with a staff of 40 and an annual budget of \$8 million. Ms. Lilygren is responsible for implementing the legislative and public affairs policies determined by AMI's Board of Directors. She is a graduate of the University of Virginia, Charlottesville, VA.

“We need to bring this campaign forward and let it seep into the American consciousness so that it becomes second nature for adults and children to take the appropriate safety steps.”

## **The Partnership for Food Safety Education**

*Sara J. Lilygren*

*The Partnership for Food Safety Education is an ambitious public-private partnership created to reduce the incidence of foodborne illness by educating Americans about safe food handling practices. The partnership combines the resources of the federal government, food industry, and several consumer organizations to conduct a broad-based food safety education campaign designed to reach men, women, and children of all ages.*

*Formed as a direct response to a 1996 independent panel report that specifically called for a public-private partnership to educate the public about safe food handling and preparation, the Partnership was initiated in 1996 and officially launched with a Memorandum of Understanding signed on May 12, 1997 by Agriculture Secretary Dan Glickman, Health and Human Services Secretary Donna Shalala, and Education Secretary Richard Riley, together with six food trade associations and three consumer/public health organizations.*

*The Partnership is committed to making safe food handling meaningful to consumers through communications that are positive, upbeat, and inherently empowering. It will utilize multiple information channels—the mass media, public service announcements, the internet, point-of-purchase materials, and school and community outreach efforts—to bring Americans face-to-face with the problem of foodborne illness and to motivate them to take action.*

*The Partnership is funded by the contributions of food industry trade associations with technical assistance and in-kind support provided by government agencies and consumer organizations. It will enlist a national network of public health, nutrition, food science, education and special constituency groups to leverage the campaign and greatly extend its reach.*

This is a combined effort said Sara Lilygren, of the Partnership for Food Safety Education. “[Industry] wanted to pull together resources to jump start food safety educational efforts that were already going on in all these different sectors. We need to make the whole issue relevant to consumers.”







"We have seen the value of educating our employees...and our workers are also consumers. We think we will have opportunities for a more educated workforce in the future if we start training kids in schools now," she said.

Industry has the resources to reach the consumer, according to Lilygren. "We know how to get consumers to change behaviors." She also noted that industry has marketing and financial resources to contribute and a lot of contact with consumers. "We have a vested interest in the public's health."

"Our goal is to put together a high-impact profile and high-impact national campaign that will change and improve consumers' food handling behavior," Lilygren said of the Partnership, noting that the campaign, for which industry is paying, needs

- a slogan
- simple key messages that are applicable to all foods
- to deliver the messages any way we can

The message must have personal meaning for individuals, she said. It also must tell them what they need to do.

"We need a coordinated ongoing food safety education campaign," Lilygren summarized. "We need to bring this campaign forward and let it seep into the American consciousness so that it becomes second nature for adults and children to take the appropriate safety steps. [Then] they can enjoy the wonderful food this country has to offer and can protect themselves and their family from foodborne illness."

### ***Members of the Partnership for Food Safety Education are:***

American Egg Board, American Meat Institute, Association of Food and Drug Officials, Consumer Federation of America, Food Marketing Institute, Industry Council of Food Safety/NRA, National Cattlemen's Beef Association, Public Voice for Food and Health Policy, Produce Marketing Association, and Grocery Manufacturers of America.

### ***Federal government***

#### ***liaisons are:***

U.S. Department of Agriculture,  
U.S. Department of Education,  
and  
U.S. Department of Health and Human Services' Food and Drug Administration, and  
Centers for Disease Control and Prevention.





### **Phillip I. Tarr**

is an associate professor of Pediatrics and Microbiology at the University of Washington School of Medicine, and a pediatrician at the Children's Hospital and Medical Center in Seattle. Dr. Tarr has a long-standing interest in the epidemiology and etiology of foodborne infections, especially those caused by *E. coli*. His research focuses on the risk factors for the development of kidney failure in children infected with *E. coli* O157:H7, and on factors that make *E. coli* O157:H7 so virulent, compared to other *E. coli*. Dr. Tarr received his Doctorate of Medicine in 1980, and subsequently completed pediatric and laboratory research training in Seattle. At this conference, Dr. Tarr was presented with the FDA Commissioner's Special Citation in recognition of the dedication and work he and his colleagues have devoted to *E. coli*.

The next advances are going to have to come from marketers and educators.

## **How Will We Know We Are Making Progress?**

*Phillip Tarr*

Research on the number of foodborne illness cases has many hurdles to overcome, according to Phillip Tarr. Most of the symptoms are minor, so people don't seek medical help. Only those with severe symptoms who visit a doctor offer us a chance for statistical information. Because of this, *E. coli* statistics are looked at as approximate.

In addition, statistics vary by state, depending on their surveillance activities. Doctors must decide whether to obtain expensive stool cultures, Tarr said, noting that the tests often are too expensive for the limited results and treatments available. Only 54 percent of the labs routinely look for *E. coli*, according to a recent CDC study. "It is too rare an infection to peak a doctor's interest."

Without better information on the cases we cannot use DNA fingerprinting to compare and isolate the sources that match, he explained. Only then do we know if the cases should be investigated as one vehicle of transmission or if they are multiple random cases.

Fifteen percent of kids under 10 years of age who have *E. coli* will get HUS, according to Tarr. Half of them will require kidney dialysis. "The problem is not spiraling out of control, but not getting any better either," he said. The number of cases has held steady since 1971 in King County, WA. He also noted that *E. coli* is now a reportable disease in all but a few states.

Tarr said he saw some improvement in the number of secondary cases, which he attributed to increased public and physicians' awareness. "If you can target a group that is at high risk—people in the restaurant industry or households with a child with diarrhea—you are likely to have success." He noted however, that most segments still consider the risk of secondary infection to be remote.

The basic messages—wash hands, work surfaces, and plates—are still needed, he said, referring to the New Jersey outbreak that traced the cause to lack of handwashing. Tarr said, however, that he doesn't think a single simple slogan is enough anymore because the issues are too complex. For example, he said, simply telling a family to wash their lettuce won't remove the risk if it is contaminated with *E. coli*. He acknowledged the difficulty educators face in trying to fully inform consumers with messages that are easily understood and doable. "It is almost impossible," he said as an example, "for us to instruct a family how to sterilize a head of lettuce [to remove the risk of *E. coli*]."

Tarr suggested focusing education and prevention activities on children, noting that while each infection has its own configuration paths, the only common theme seems to be children. "We know only the tip of the iceberg," he said. "The enumeration numbers are soft and different pathogens require different enumerations. Public health surveillance activities also must be enhanced."

To increase food safety in the homes, "the next advances are going to have to come from marketers and educators," he said. "You must be encouraged by what has been said here at this conference."



# Closing Remarks/ Summary

*Vicky Freimuth*

"It is clear that we face the challenge of working in a dynamic and complex environment in both food safety and communication," said Vicky Freimuth, citing the first of four challenges she issued to conference attendees. New food processes, consumer trends to eat away from home, global food sources, and changing communication channels are creating additional challenges, she noted.

Second, we face the challenge of reaching consensus on key messages, she said. What are common messages and how do we avoid messages that conflict? Should messages be science-based in terms of the pathogens or doable suggestions? "Information alone is not going to result in behavior change," Freimuth said. "Communication is not a magic bullet. There must be context on what the consumer can and cannot do."

Third, we need to find the right openings or channels for presenting our messages to target audiences, according to Freimuth. Using the news media during outbreaks or crises provides an opportunity to reach a lot of people. How will those messages be expressed? How can we keep the messages from blaming the victims? How can we build a partnership to leverage opportunities as they come along? Freimuth noted that during the Strawberry outbreak, she received 300 calls in a 24-hour period.

Fourth, "I energize you—empower you—to use this conference to start setting this as an agenda item in your group," she said. She encouraged participants to think about partnerships in their communities and viable targets and to use Food Safety Education Month—September—as a catalyst, as a starting point.



## ***Vicki Freimuth***

is associate director for Communication at the Centers for Disease Control and Prevention (CDC) in Atlanta, GA, and is an internationally recognized leader in health communications. She administers the health communication and media relations programs and strengthens the science and practice of health communications throughout CDC. Ms. Freimuth has provided strategic vision on health communication to many private and federal health organizations. She received her Ph.D. in Communication Theory and Research from Florida State University.





# **Poster Presentations**



## “Food Safety Can Be Fun” Educational Kit

Arlene Robertson, Manager Food Quality & Safety Programs, Education, Research & Labs Division, Ontario Ministry of Agriculture Food & Rural Affairs, 1 Stone Rd., Guelph, Ontario, Canada, N1G 4Y2, tel (519)826-3535, fax (519) 826-3533.

### **Objective:**

This video and educational guide explores the safe handling of food, promotes a healthy lifestyle and educates young people to reduce the risk of foodborne illness. The kit offers a range of classroom activities for young people in Grades 7 to 10 (ages 12 to 17) and can be applied wherever young people handle food.

“Food Safety Can Be Fun” is an episode of “Street Cents”, the popular CBC (Canadian Broadcasting Corporation) television consumer series. The program gives young people a voice in the market place by testing products, doing consumer investigations and by providing opportunities for students to learn that they have choices and can influence the market place. Fun and fast-paced, the episode consists of segments in which different aspects of food safety are highlighted. The video serves as an excellent motivator to introduce food safety concepts into the classroom or a youth group gathering.

Each activity in the guide includes an activity outcome, teacher preparation and links to the Ontario Common Curriculum and assessment strategies. Teachers and youth group leaders are encouraged to use as many of the activities as possible within their regular programs. The guide develops the concepts introduced in the video through specific activities and additional information. Direct integration possibilities are specifically linked to family studies, health, language, science and technology. Students are encouraged to involve the family in food safety awareness. By gathering data in the home, this information becomes more relevant to young people and their families.

The education kit was made available to schools in Ontario, Canada, in November of 1996 and its popularity has quickly spread across Canada with schools, health units and youth programs purchasing copies of the kit. The kit sells for \$15 Canadian.

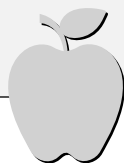
The kit has been awarded the “Seal of Approval” for school use by the Ontario Agri-Food Education Inc. The video portion of the kit is the recipient of a Golden Sheaf Award in the Educational/Instructional category by the Yorkton Short Film and Video Festival, Saskatchewan, Canada as well as an Award of Excellence from The Alliance for Children and Television, Canada.

## Teaching Consumer Food Safety in Community Education Settings Through an Effective and FUN Game

Alice Henneman, MS, RD. University of Nebraska Cooperative Extension, 444 Cherrycreek Road, Lincoln, NE 68528-1507

*Though* the consumer is an important link in the chain of defense against foodborne illness, the average consumer receives little training on how to “handle food safely” in the home. There is a need for food safety programs that appeal to consumers and that are suitable for presentation in community settings. ***Don’t Get Bugged*** by a ***Foodborne Illness***, an educational game, was designed with the objective of helping people learn and use recommended food safety practices in the home. This activity is appropriate for one half to one hour programs for ages 12 and up. Participants reflect on their food safety knowledge and enjoy the excitement of playing a game in this unique educational activity. The facilitator reads 16 true/false questions based on surveys of frequent causes of foodborne illness. Players mark “T” or “F” on a bingo-type game card with the letters: S-A-F-E. The facilitator then discusses the answers and players check each square answered correctly. Four squares checked across, down or diagonally in a row is a “win.” A “quiz bowl” version is also available for use with single players at health fairs or clinics. Game materials are reproduction ready—educators can be up-and-running within a half hour of receiving the game. Each kit includes a reproducible promotional flyer, tabletop poster, a sample news release, and end-of-activity evaluation. More than 1,000 people have participated in ***Don’t Get Bugged*** educational activities through personal teaching contacts by our office. Additionally, more than 750 educators in 45 states plus Canada and Australia have requested the ***Don’t Get Bugged*** kit in its first six months of national availability. During the initial development, a post-activity evaluation was collected from 214 participants: 97% felt they increased their knowledge of food safety. Additionally, when asked about enjoyment of the game, 79% gave a high rating. One-month follow-up data from 63 participants indicated that 100% had started at least one safe food practice or felt more committed to continuing a practice. Other educators can use this model to teach food safety in community education settings. As well as providing specific food safety information, ***Don’t Get Bugged*** is also a delivery system for teaching food safety and can be updated as new concerns arise.





## The Food Service Inspector as Health Educator: ANALYSIS OF THE NEW ROLE

Gina Marie Piane, Dr.P.H. Northern Illinois University,  
School of Allied Health Professions, DeKalb, IL 60115

**The** traditional role of the food service inspector is that of an enforcer, with a punitive relationship toward the food service manager. A new approach, which merges food service inspection and health education, was evaluated in regard to the food service manager's perception of the inspector, the manager's relationship with the local public health department, and the perceived need for educational sessions. The new approach, which includes inspectors giving group presentations to food service employees, Hazard Analysis of Critical Control Points (HACCP) procedures, and an inspection report that informs the manager about compliance as well as violations, is compared to the traditional approach. Eighty-two food service establishments, forty-one from the jurisdiction where the new approach was implemented and forty-one from an adjacent jurisdiction were surveyed by telephone. Survey respondents reported that the inspectors who used the consultive, educational approach, are more knowledgeable, professional, and easier to understand. Also, the food service managers in the jurisdiction of the pilot program have more positive perceptions about the value of the county health department inspectors.

## Food Safety Science— NEW EXHIBITS AT THE SCIENCE MUSEUM OF VIRGINIA

David Grimes, Kendall Malone, Eugene Maurakis\*,  
Jeanine Sherry, Marilyn Weyer-Elder, Laura Young.

**The** Science Museum of Virginia is currently developing a large scale interactive exhibition about food safety and nutrition. Food Safety Science exhibits, comprising half of the exhibition, will address three goals:

- Enabling visitors to make informed food safety choices
- Relating safe food handling behaviors to the lives of visitors
- Making food safety information fun and easy to understand

Interactive exhibitions make content messages more memorable and more accessible to different learning styles because they provide an environmental-tactile-sensory experience. Through its hands-on exhibitions and interactive programs, the Science Museum of Virginia welcomes more than 350,000 visitors each year. Food Safety Science exhibits, including 10-15 interactive components, will be installed at the museum by 2000 and will reach new audiences by traveling to other science centers.

One of the highlights of the exhibition will be a *consumer targeted* HACCP video, following a product from harvest to consumption. The rest of the exhibition will incorporate HACCP principles by encouraging visitors to consider their food choices to be risk analyses. For example, visitors will walk through a mocked-up kitchen, testing their knowledge of food safety in the home. Visitors will take on the role of bacteria, systematically breaking down large scale model molecules and seeing subsequent changes in a food item. Visitors will be asked to identify products containing preservatives or microorganisms and to think about how that might affect product safety.

As with all of its exhibitions, the Science Museum of Virginia will develop a teacher guide to accompany Food Safety Science. The K-12 activities in the guide will be based on content from the interactive exhibits and will include the best educational materials from nationwide sources. The guide, correlated with Virginia Standards of Learning, will help teachers incorporate food safety issues into other parts of the science curriculum.

\*To whom correspondence should be addressed. Science Museum of Virginia, Office of the Museum Scientist, 2500 West Broad Street, Richmond, VA 23220.



## POSTER PRESENTATIONS



### Food Safety for One Time Food Functions

**Many** Extension related organizations conduct food activities for the general public. Organizers of the events often do not have adequate food safety information available to them in a concise user-friendly format. A team of Extension professionals developed a series of single-concept brochures focusing on food safety for group functions. Topics include pot luck dinners, fund raisers, holidays, packed lunches and picnic meals. Each brochure identifies critical control points during preparation, handling and storing of food. This project was funded through the special funds for Food Safety and Quality project.

**Objectives of the project are as follows.**  
**Participants will:**

- develop an understanding of safe food handling practices and the potential for foodborne illness by improper handling procedures
- become aware of safe food handling practices in preparing, serving and storing foods
- become aware of strategies needed to successfully conduct a food-related activity from a food-safety perspective

Copies of the brochures will be on display as well as initial evaluation results. These materials have the potential to be used in a variety of settings nationally.

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## Outbreak Investigation Exercises on the World Wide Web

Ronald D. Smith, DVM, PhD. College of Veterinary Medicine, University of Illinois, Urbana, IL 61802

**During** foodborne disease outbreak investigations food service employees and affected consumers are usually the target of investigative efforts. In this role they have little opportunity to learn principles of foodborne disease prevention which usually emerge from such investigations. In order to address this deficiency a series of World Wide Web (Web)-based outbreak investigation exercises were developed that permit users to become part of the outbreak investigation team, thereby learning about food safety issues from a problem-solving perspective.

Users are provided with information about each outbreak in a sequential fashion and must correctly answer questions and/or perform simple analyses before being allowed to progress to the next stage of the investigation. To assist users in researching each outbreak, links to a series of Web-based general and specific resources were provided. An online calculator is also provided to facilitate calculations.

User progress through each computer-assisted instruction (CAI) lesson is monitored by "TRACKER", a client-based system developed through a USDA-CSREES Higher Education Challenge Grant. TRACKER includes the following features:

1. Interactive scoring—evaluates and scores student responses to individual questions and each lesson overall.
  2. Distance learning support—instructor can assign lessons without any intervention. Student progress can be monitored through e-mail verification or captured on a local server.
  3. Platform independence—each lesson can be run using any Netscape 3.0-comparable, JAVA-enabled browser.
  4. Server independence—all functions are performed on the user's computer.
  5. Transportability—lesson modules can be distributed and run over the World Wide Web, on CD-ROM, or other high-density media.
  6. Easy editing—file name, location, and most recent revision are listed at the bottom of each page to facilitate editing. Lessons can be edited with Netscape Gold and other comparable editing programs.
  7. Interchangeable authoring tools - each lesson includes a number of client-side modules and help reference pages that can be used for authoring other lessons.
  8. Feedback to the authors - users can provide feedback to authors through e-mail links or forms.
- At the end of each case the user is given an opportunity to fill out a very brief survey form and be added to our e-mail distribution list.





## POSTER PRESENTATIONS



### Multimedia Web-Based Food Safety Module for High School Students

Jim Huss, Ph.D., Pat Redlinger, Ph.D., Jan Temple, M.S., Peggy Sherry. Iowa State University, Hotel, Restaurant, and Institution Management Extension, 11 MacKay Hall, Ames, IA 50011-1120.

**The** purpose of this project is to develop and test an interactive multimedia web-based food safety module for high school students. The lessons will incorporate sound, animation, and visual stimuli to teach basic food safety concepts. The students will be assigned structured multimedia lessons to help them gain knowledge. The lessons will include the relationship of pH and acidity on food preservation, an overview of common foodborne pathogens, cross-contamination, personal hygiene, and time-temperature concepts. The module will include a pre- and post-test that gives the student and teacher immediate feedback and scoring using Common Gateway Interface (CAI) scripts and PERL (Practical Extraction and Report Language) programming. A visual model (icon) for food safety using the acronym FAT TOM (food, acidity time/temperature, oxygen, moisture) will introduce the principles of HACCP (Hazard Analysis Critical Control Points). A more consumer-friendly term, Consumer Control Points (originally introduced by Carole Schiffman, Director of Consumer Education Staff, FDA/CFSAN) will be presented. This project will utilize a cross-discipline, collaborative, team approach to curriculum development. Members of the team included a food safety scientist, and Extension nutrition and health field specialist, graphics artist, programmer, and technical writer.

### Interactive Youth Food Safety Training— LET'S HAVE A KILLER COOKOUT

Mark L. Tamplin, PhD, Travis M. Lynch, BA, Douglas R. Weldon, BFA. Lighthouse Education & Design, 6793 W. Newberry Road, Suite 333, Gainesville, FL 32607

**This** interactive CD-ROM, made possible by a USDA grant and scripted by Mark L. Tamplin, Ph.D., is an excellent supplement to school health, nutrition, and food science curricula. Designed for children in grades 4 through 12, these highly interactive lessons, games, and quizzes may be set up in a computer lab, library, or used in the student's home. The lessons are taught through the preparations necessary for a fictional cookout. The students are taken on a trip to the grocery store to learn the proper order in which to shop for foods, how to spot damaged packages and expired date-labels, and which foods to bag separately from others. Next, the students are shown how to safely handle hazardous foods in their own kitchen, and how to avoid cross-contamination while preparing these foods.

Slide shows, videos, and audio files teach food safety basics. With a click of the mouse, sections of text may be spoken aloud for younger students who may have difficulty with the words. Interactive games give the students an opportunity to practice what they have learned before taking a quiz. A built-in student evaluation package helps the teacher know how far each of the students has worked through the lessons, which concepts have been mastered, and charts the numbers of errors. Also, the teacher can set the passing scores for each section to tailor the program to their student's needs.





## Food Safety Educational Materials for Children and Child Care Providers

Pat Hammerschmidt, MS, CFCS, Les Bourquin, PhD, Carol Wruble, MS, RD. Michigan State University Extension, 103 Human Ecology Building, East Lansing, MI 48824-1030, phone 517-355-6586, FAX 517-353-6343, e-mail to [hammersc@msue.msu.edu](mailto:hammersc@msue.msu.edu) (for P. Hammerschmidt)

**Food** safety educational materials are available through Michigan State University Extension to help children (Operation RISK curriculum) and child care providers (What You Can't See Can Hurt Your Kids and You!) prevent foodborne illness. Through Operation RISK, elementary-age children explore what they can do to prevent foodborne illness. Kids assume the role of detectives as they work through this multimedia program. The curriculum includes a Teacher/Leader Guide with 4 complete, interactive lessons to teach kids how foodborne illness is caused and prevented; a videotape that demonstrates kids making decisions about safe food handling behavior; an audiotape of a Handwashing Rap to reinforce how and why to wash hands. A computer game, Risk Raiders, is available separately and allows student detectives to practice food safety behaviors. Operation RISK was tested in 16 classrooms and seven 4-H groups. It was developed with support from the USDA Extension Service (Special Project #91-EFSQ-1-4009).

What You Can't See Can Hurt Your Kids and You! is a 17-page booklet that explains how to prevent foodborne illness in a child care facility. Each page describes a food handling topic important in the child care setting such as food handling regulations, food storage, sanitizing, and tips for food-safe field trips. The booklet was tested with 293 day care home providers and 367 child care center teachers.

Ordering information for both materials will be provided.

## National Food Safety Education Month/ *Chef CookSmart* Materials

Cindy Wilson, Manager of Communications, The Industry Council on Food Safety, 250 S. Wacker Drive, Chicago, IL 60606

**In** September 1997, the Industry Council on Food Safety will sponsor the third annual National Food Safety Education Month (NFSEM), an awareness campaign which targets consumers and foodservice workers. In addition to reassuring consumers that the foodservice industry is committed to serving safe food, the consumer campaign reminds the public that food safety rules also apply to food pre-prepared by professionals and brought into the home. This point is especially important today, as consumption of carry-out food continues to increase, along with large, value-sized restaurant portions often resulting in leftovers.

Through NFSEM, consumers are offered the "recipe for safe food handling" based on procedures used by foodservice professionals. This easy-to-understand concept is explained in a comprehensive, free consumer booklet, *Chef CookSmart's Guide to Safe Food Preparation and Handling*. The booklet also includes a reminder card of food safety basics to post on the refrigerator. A related consumer brochure, *Chef CookSmart's Tips*, offers excerpts from the booklet, including steps for keeping carry-out food and leftovers safe.

The poster presentation will focus on explaining how conference attendees can participate in NFSEM this September, and how they can make the *Chef CookSmart* materials available to consumers.



## POSTER PRESENTATIONS



### Food Safety Educational Materials Targeting Each Link of the Food Chain

William Benjy Mikel, Ph.D. and William R. Jones, Ph.D. Animal Sciences, University of Kentucky, Lexington, KY 40546 and Auburn University, Auburn, AL 36849.

*The* safety of the food supply is of concern to all segments of the food chain, from production through consumption. Therefore, it is only logical that each link in the food chain be partially responsible for the safety of the foods consumed. To this end, materials and programs were developed to educate the various segments involved in the handling of foods. Segments included producers, processors, retailers, food service employees, and consumers. Materials targeted each group with information related to personal hygiene, time-temperature abuse, cross-contamination, proper cooking methods, and general microbiological information. In addition to written materials, two video tapes, one targeting consumers and one targeting food service employees, were developed for use in related seminars and workshops. All materials were used to support county extension agent training, food processing and food service employee training and general consumer seminars on food safety. Training was conducted on a regular basis generally in tri-county areas with support from the local and state department of health employees. Pre- and post-test scores indicate that attendees' knowledge of safe food handling practices increased. Further studies are needed to ascertain if this knowledge is put in practice in the workplace and home.

### Serve Food Safely: A VOLUNTEER TRAINING SYSTEM

Lisa DeFilippo Kafferlin, BS, Erie County, PA. Dept. of Health, Pamela B. Roberts, MPA, Active Aging, Inc. Area Agency On Aging. 1034 Park Avenue, Meadville, PA 16335

*Community* Food Service Sites present a unique challenge for training large numbers of volunteers that prepare and serve meals to the public. Volunteers are most often not trained due to time and money constraints and constant turnover. Serve Food Safely: A Volunteer Training System, has been created to overcome these barriers. The consumer education program provides easy to understand techniques for volunteers as well as even easier to implement training materials for supervisors. This multimedia training system was designed specifically for senior centers and other community sites, such as fire halls, churches, service clubs, and soup kitchens. The key to the system is a 45 minute interactive video, divided into 9 easy to master lessons that accompany the volunteer training guide. Community volunteers are depicted preparing and serving meals at an actual community center. Included in the heavy duty, screen printed binder is a reproducible volunteer handbook, and a supervisors training guide which features publicity and presentation suggestions along with the closed captioned video. Food handler tests and answers, certificates of completion, posters, and press releases are also included in the training manual. This system improves volunteers' morale and increases their self-esteem through replicable recognition events acknowledging their achievement. Training sessions can accommodate groups of any size as well as home self study course for individuals. By utilizing Serve Food Safely: A Volunteer Training System, you will be able to increase the number of trained volunteers in a community meal site thereby lessening the threat of foodborne illness when serving the public.



## POSTER PRESENTATIONS



### Visual Education of Consumers to Decrease Foodborne Illness

Rob Pirolo, Robert Harris, Allen M Clark MD, PhD.  
Domani Laboratories, 2136 Pacific Ave. Tacoma, WA 98402

**How** does E. coli get in hamburger or Salmonella in eggs? Many consumers can not answer these questions. There is a need to provide visual education to overcome barriers due to cultural, language, and educational diversities. We have produced an easy to understand series of posters showing pictorially how bacteria found in farm animals can persist in meat and eggs. Bacteria can also be transferred to cutting boards, hands, or utensils. In one example, colored drawings show E. coli O157:H7 in raw beef contaminating a cutting board, knife, and tomato. The poster also emphasizes how E. coli can survive in the center of undercooked hamburger. The drawing explains how simple acts, like thorough cooking of food and washing of hands and utensils, can help decrease foodborne illness. Visual education can overcome language barriers and emphasize safe cooking and cleaning practices. Health educators, food distributors, and food retailers should use the posters to teach food safety.

\*Posters are available to reviewers on request.

### Foodborne Diseases Active Surveillance Network (FoodNet) Population-Based Surveillance:

BEHAVIORAL RISK FACTORS FOR  
FOODBORNE DISEASES—  
CALIFORNIA, CONNECTICUT, GEORGIA,  
MINNESOTA, AND OREGON 1996.

FoodNet Working Group-Foodborne and Diarrheal Diseases Branch, National Center for Infectious Disease, Centers for Disease Control and Prevention; California State Health Department Services; Connecticut State Department of Health; Georgia Department of Human Resources; Minnesota Department of Health; Oregon Health Division. Food Safety and Inspection Service, United States Department of Agriculture.

**Behavioral risk factors** for foodborne diseases include food consumption, handling, and preparation practices; however, little is known about the prevalence of these risk factors in the general population. The CDC/USDA/FDA Foodborne Diseases Active Surveillance Network (FoodNet) is the foodborne diseases component of the CDC's Emerging Infections Program. The objectives of FoodNet are to determine more precisely the burden of foodborne diseases and the proportion of these diseases attributed to certain foods or behaviors. As part of FoodNet, 9000 randomly selected individuals in California, Connecticut, Georgia, Minnesota, and Oregon were interviewed between June 1, 1996 and May 31, 1997 to provide population-based estimates of risk behaviors associated with foodborne diseases. Data collected, to be presented at this conference, include demographic characteristics of persons engaging in behaviors such as eating undercooked hamburgers and hand washing after handling raw meat. In addition, data were collected about awareness of the new meat and poultry labels regarding the safe handling and preparation of meat and poultry. Analyses of these data provide valuable demographic information about the population at risk for foodborne diseases and will help to target public health educational campaigns.





## A Feasibility Study of a New England Food Safety, Quality and Food Preservation Hotline

Martha Patnood, MS, CFCS, University of Rhode Island, Department of Food Science and Nutrition, Catherine Violette, MS, RD, University of New Hampshire, Animal and Nutritional Sciences on behalf of the New England Cooperative Extension Food Safety Group which also includes: Dr Mahmoud El-Begearmi, University of Maine, Dr Kenneth Hall and Diane Wright Hirsch, MPH, RD, University of Connecticut, Dr Nancy Cohen, University of Massachusetts, Dale Steen, MA and Karen Scheidneider, MS, CFCS, University of Vermont.

**Providing** current, research based responses to food safety, quality and preservation questions in a timely, efficient manner presents special problems to county/district Cooperative Extension Educators in the New England region. Due to a steady decline in available financial and personnel resources the number of demands on a shrinking professional staff have increased dramatically in the past five years. In addition, changes in local and national program priorities have necessitated the development of creative and innovative program delivery techniques to enhance efficiency. Due to these demands, especially during the months of June-September, the Cooperative Extension Educator are often not available to immediately answer consumer inquiries.

The goal of this feasibility study was to determine if a toll-free hotline accessible from three New England states-Rhode Island, Vermont and New Hampshire could maximize the use of food safety expertise in the region and provide a cost-efficient means of disseminating research-based information to consumers. The project was built upon the success of the Rhode Island Consumer/ Gardening Hotline which for the past ten years has answered an average of 2,000 consumer calls each year. Beginning June 17, 1997 an additional phone line was added to Rhode Island's existing Hotline which provided consumers in Vermont and New Hampshire access to the toll-free number from Monday-Thursday from 9am to 2pm. The hotline was staffed by trained volunteers, paid professional staff and student interns. An extensive marketing plan including releases to print and voice media outlets and distribution of posters to stores, farmers markets and food co-ops in the three states.

### Results

From June 15- September 30, 1997, 769 calls on a variety of food safety, preparation, quality and preservation questions were received, researched and answered by Hotline personnel. Policies and procedures for responding to these calls and referrals from local/district offices were established and com-

- municated to professionals in all three states. Data on the
- time spent with caller and the "question research time" was
- collected from a subsample of callers. This same information
- was collected from a subsample of callers to county/district
- offices in the five New England states (Rhode Island no
- longer has district/county offices). A comparison was made
- of the amount of time the two groups spent with callers .
- The majority of calls to the hotline were one to two minutes
- in length (62.2%) while the majority of calls to made to
- county/local offices were 5 to 15 minutes in length 56.2%).
- Hotline question research time averaged from one to two
- minutes (68.4%) and for county/district offices the calls aver-
- aged from five to fifteen minutes (56.2%).
- A random subsample of hotline callers were called in No-
- vember to January to determine their level of satisfaction
- with the information/resources they received. The surveyors
- were only able to contact a small number of consumers (14)
- due to disconnected numbers. However, those polled were
- extremely satisfied with the information/resources they re-
- ceived and stated they would use this type of hotline if it
- were available year round. It was also clear they strongly
- identified this educational outreach activity with their state's
- Cooperative Extension.
- Extension Educators/Specialists in Vermont and New Hamp-
- shire were surveyed to assess the effectiveness of the hotline.
- Of the eight respondents, seven (88%) indicated that the
- availability of the hotline saved them time. Estimates of hours
- saved ranged from 2 to 40 hours with an average of 15 hours
- saved.
- In conclusion, the New England Food Safety and Preserva-
- tion Hotline based at the University of Rhode Island pro-
- vided efficient and cost effective means of increasing con-
- sumer access to current research based food safety and pres-
- ervation information. The hotline, and enhanced use of the
- latest communication/computer technology has the capacity
- to provide consumers a rapid response to their food safety/
- quality questions in a cost-effective manner, while maintain-
- ing state identify. This delivery method also "frees" Coopera-
- tive Extension Educators to focus on delivering educational
- programs to targeted audiences.





## High Risk Food Consumption, Handling and Preparation Practices in 5 States: THE 1995 BRFS FOOD SAFETY MODULE

S. Yang, M. Leff, D. McTague, J. Jackson-Thompson, T. Murayi, T. Melnik, D. Ridings, S. Altekruse, F. Angulo. Foodborne and Diarrheal Diseases Branch, National Center for Infectious Disease, Centers for Disease Control; Center for Food Safety and Applied Nutrition, United States Food and Drug Administration; and the Colorado, Florida, Missouri, New York, Tennessee State Health Departments.

*Although* several food consumption, handling, and preparation practices are associated with foodborne disease, limited information is available about the prevalences of these practices. In 1995, a Food Safety Module consisting of 12 questions related to food consumption, handling and preparation practices which have been associated with foodborne diseases was developed and administered during the Behavioral Risk Factor Surveillance System (BRFSS) in 5 states (Colorado, Florida, Missouri, New York, and Tennessee); BRFSS is a state-based survey of health-related practices and behaviors of adults. In particular, this Food Safety Module asked questions regarding how often the following items were consumed in the past year: home-canned vegetables, hamburgers, hamburgers which were "still pink or red on the inside", "soft" eggs, raw oysters, and unpasteurized milk. Plus, it included questions about actions taken after handling raw meat and after using a cutting board for raw meat. The Food Safety Module also asked if subjects remembered seeing the new labeling information on uncooked meat and poultry, if they remembered reading these new labels, and whether the new labeling information changed the way they prepare meat and poultry. Finally, this Module asked if subjects were ill with diarrhea in the past month. At this conference, we will be presenting preliminary data from this Food Safety Module.

## Detective Mike Robe's Food Safety Education Program for Consumers

Martha Patnoad, MS, CFCS, Lori F. Pivarnik, Ph.D., University of Rhode Island, Food Science and Nutrition Department, Kingston, RI 02881

*Consumers* are concerned about the safety of their food supply. However, public perceptions of food safety risks are different from those documented by science. Therefore, the public continues to improperly assess food safety hazards through unacceptable food handling and storage practices. Providing accurate food safety information to consumers in a format that they will easily understand and apply continues to be a challenge to all food safety educators. The objective of this program was to assess food safety knowledge and concerns of Rhode Island consumers and to develop and implement an educational program that would disseminate the essential food safety information, as dictated by the results of the survey, in an "eye-catching" layout. Utilizing Value-Pak coupon packages that were mailed to Rhode Island households, an eight question survey was developed that focused on basic food safety principles including: handwashing, time/temperature controls, sanitation practices and credibility of media presentation of food safety information. The survey asked the respondent to indicate their frequency of practices relating to the topics as always, often, sometimes or never. Based on the results of this survey, innovative educational materials were developed in an effort to attract consumer interest. Utilizing the successful Detective Mike Robe food safety theme that has been developed at the University of Rhode Island for preschool and school aged youth, interactive, electronic boards were designed that allowed for question and answer responses on food and sea-food safety. These boards were presented as part of an informational "traveling" show. A Detective Mike Robe poster with a series of five point of purchase informational food safety cards were developed and have been distributed to daycare and health centers in an effort to first distribute the information to parents and caregivers of young children. These materials can be utilized with a variety of target audiences throughout the country.



## A Food Safety Training Program for Child Care Providers

Betty D. Anderson-Shuler RD, MPH, Seattle King County Department of Public Health, Child Care Health Program, 2124 4th Ave. Seattle, Washington 98121

**Every** day thousands of young children leave home to spend most or part of their day in some type of child care setting. In King County, Washington, close to sixty percent of families with children under five used child care during 1996. With the implementation of welfare reform the numbers of children being cared for outside of their homes is estimated to climb even further. Children and their parents depend on child care providers to provide for their safety and health during the hours that they are in care. Group care contributes to increased exposure and spread of communicable disease, including foodborne illness. Public health interventions, including assurance that child care providers handle food safely, are keys to protecting our children from serious diseases and injury. ***The National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs***, developed by the American Public Health Association and the American Academy of Pediatrics through a grant from the Maternal and Child Health Bureau, recognizes the importance that foods provided in child care are safe for children to eat, with specific standards addressing food safety. Standard NU71 states "All food stored, prepared, or served must be microbiologically, chemically, and physically safe for human consumption."

As part of the Seattle King County Department of Public Health's Child Care Health Program, a food safety training program was developed to increase the knowledge and skills of child care providers in providing safe food. The program is designed to meet the unique characteristics and training needs of child care providers, taking into consideration adult learning principles. Materials developed for use in this program include self-assessment checklists, kitchen cleaning checklists, scenarios and activities for use in interactive training sessions, posters to remind staff of safe practices, and information sheets on various food safety topics frequently encountered in child care settings. Short video clips of real food handling situations in child care settings are in process and may be ready by June. These materials should be of great interest to other educators, as child care providers are a large group of consumers who handle food for an increasing number of young children who are extremely vulnerable to foodborne illness.

## Consumer Perceptions of HACCP and the Price of Meat

Lisa T. Ford, B.S., Karen P. Penner, Ph.D. and Orlen Grunewald, Ph.D. Kansas State University, Department of Foods and Nutrition, Justin Hall, Manhattan, KS 66506-1407

**Food borne outbreaks** caused by *E.coli* 0157:H7 in ground beef have caused increased consumer concerns about the safety of red meats. This study was undertaken to: 1) assess consumers' perceptions of meat quality and safety, 2) determine consumers' perceptions of HACCP, and 3) assess the monetary value consumers would place on ground beef processed with a HACCP system in place compared with ground beef processed without a HACCP system. Four consumer focus groups were conducted in Manhattan, KS. Potential participants were screened to be sure they consumed red meat at least once a week. Each focus group session lasted 1.5 hr. At the start of the focus group sessions, selected panelists completed a questionnaire to assess their overall food safety knowledge prior to participating in the discussion. Then, the trained moderator, using an intentionally-developed moderator guide asked questions about meat quality and safety. The panelists were given a handout depicting the required meat safety label and asked their perceptions of the information provided on the label. Panelists then viewed a 12-minute video on HACCP. After the video, they completed a willingness-to-pay exercise in which they chose between ground beef processed with a HACCP system in place or ground beef processed without a HACCP system and then discussed their reactions to HACCP and to the price of meat. Eighty-three percent of the panelists had read the meat safety label previously. Reactions to the label, however, were both positive and negative. Comments indicated they thought the labels were vaguely worded. For example, the word "thoroughly" can mean many things and does not provide clear direction for cooking. The panelists reacted positively to the concept of HACCP and felt it would convey a higher level of assurance of safety in meat products. Eighty percent of the panelists were willing to pay more for the HACCP-processed ground beef than the non-HACCP processed beef. In fact, 22 percent were willing to pay as much as \$.45 more per pound. In the follow up discussion, panelist expressed mixed reactions, however, about paying more for safety that some felt should already be part of the processing procedure.



## POSTER PRESENTATIONS



### Handwashing Campaign

Glenda M. Christy, MPA, Chief, Food Protection Program, Allegheny County Health Department, 3901 Penn Avenue, Pittsburgh, PA 15224-1344

**Last year** there were five hundred seventeen (517) confirmed cases of shigellosis reported to the Allegheny County Health Department. An average of twenty-eight (28) cases were reported annually in the County during the previous five years. A major 1996 outbreak of eighty-eight (88) people directly implicated food preparation. The lack of handwashing was believed to be a contributing factor in this outbreak and in most of the other cases that year.

While nearly everyone says they wash their hands after using the restroom, observational surveys show the number who do is much lower. Only 61% of males and 74% of females washed their hands in a survey of five major U.S. cities last year. A recent Allegheny County Health Department survey found rates much worse, just 21% for males and 58% for females.

In response to these findings, the Health Department launched a campaign to encourage handwashing through a series of posters available for display in public restrooms. The posters contain short stories with handwashing themes based on literary classics. They are meant to be displayed inside stall doors and above urinals. They provide convenient reading material meant for a captive audience and communicate the importance of handwashing. The campaign is called

***"The Literary Classics -***

***A New Kind of Reading Material for Public Restrooms. "***

Posters are being distributed to all facilities with public or employee restrooms.

### Keep Food Safe

Lydia Medeiros, PhD., Margaret Griffiths, MS, Marcia Jess, MAHE, Doris Herringshaw, MA, Susan Zies, MS, Beverly Koenig, MS, Barbara Rohrs, BS. Ohio State University Extension, Columbus, Ohio. (Juliana Gomez-Saccucci, translator)

**The** goal of this project was to provide food safety information and instruction primarily for Migrant Farm Families who travel through the United States from Mexico, Texas, or other parts of North America. This information has relevance to the wider limited resource audience served by Extension Services nationwide. This is why complete versions are provided in both English and Spanish.

There are five lessons in the curriculum:

- Planning and Purchasing Safe Food
- Storing Food Supplies Safely
- Preparing Food
- Serving and Storing Prepared Food
- Handling Leftovers

The lessons were based on the principles of the Hazard Analysis and Critical Control Point (HACCP) system. Participants are encouraged to critically analyze how they approach food preparation and what practices they use that

- allow microorganisms to enter the food system, and
- allow the microorganism in the food to grow.

The lesson participants are asked to take a greater responsibility for critically thinking about safety as they work with food. Each of the five lessons is written as a self-contained lesson. The five are not designed to be presented in sequence, but could be if so desired.

Curriculum Components include:

- 5 Mini-Lessons for presentation in about 5 minutes.
- 5 Full Lessons for presentation in about 1 hour.
- Teaching Aids include camera-ready copies of handouts, overhead transparencies and activity sheets
- Good Food Newsletter is a camera-ready family newsletter
- Better Living Series Fact Sheets Low literacy fact sheets
- Evaluation Tools including a camera-ready evaluation instrument specific for each of the five lessons





## POSTER PRESENTATIONS



### Experiential Food Safety Curriculum for At-Risk Youth:

#### A COOPERATIVE EFFORT

Carol Campbell, MS, Melissa Mixon, PhD, RD, LD, Sharron Belew, Mississippi Cooperative Extension Service, Mississippi State University, Mississippi State, MS 39762-9745

**Project GESTALT** (Growth and Education for Students, Teachers, and Advocates Linked Together) has established a coalition between the Jackson Public School (JPS) District and other partners to enhance the learning of reading, mathematics, and science concepts by at-risk students. The objectives of this project were:

- to instill positive food safety life skills into academically at-risk students by incorporating an experiential food safety curriculum into an existing after-school program for at-risk youth in an inner city population of academically, socially, and economically at-risk students and to expand into an elementary school not presently participating in the program;
- to instill positive food safety life skills for the parents of the children in the program via transfer of knowledge and participation in two parent workshops.

This food safety and quality special project provided a experienced-based food safety curriculum, "Discover Food Safety," for minority first and second graders which was incorporated into the existing after-school program at an inner-city JPS for a

- two-week period in March 1997. Eight lessons were developed in a notebook format along with eight plastic totes containing a variety of materials for each one of the lessons. Materials stressed reading, science, and math concepts with hands-on activities which were appropriate according to the JPS District Curriculum for first and second graders and observation at the after-school program.

- Evaluation of this material for each of the children included a Pre and Post Knowledge Survey designed to measure food safety concepts covered. A Pre and Post Directed Play Activity using a child's kitchen play set was conducted to measure any behavioral changes. The teachers and students were also asked to complete an evaluation of the materials used in this curriculum. Parents were involved in the program with materials sent home throughout the presentation of the unit. In addition, two meetings were arranged with the parents through the "School-Family Partnership Program" to present food safety educational training and collect data. Pre and Post Knowledge Surveys and Pre and Post Food Safety Attitude Surveys were conducted at the two parent meetings. All data will be analyzed and presented at the June 1997 first national food safety conference. This food safety curriculum will be presented to other area schools participating in the Project GESTALT after-school program in the near future and will hopefully expand to other areas of the state.





## Food Safety Education Basics for Consumers

Susan Moore, American Plastics Council,  
1801 K Street, N.W., Suite 701 L, Washington, DC  
20006-1301.

**Food safety** is a growing concern among consumers. This year, foodborne illnesses will strike as many as 1 out of 3 Americans. While most reports of food contamination suggest that the cause originates outside the home, 50-80% of cases of foodborne illness originate in our own homes.

Fortunately, food safety experts agree that many of these cases could be prevented if consumers learned the basics of safe food handling. Because plastic plays a key role in food packaging—serving as a barrier against contamination, preserving freshness and nutrients, and providing a variety of effective, convenient, economical and widely-used food storage materials—the American Plastics Council developed a food safety education campaign.

Developed in conjunction with two registered dietitians who both have over 20 years experience, the program's objectives were: (1) to deliver basic safe food handling information and tips, (2) to communicate these tips in a "language consumers could easily digest," so consumers could readily and immediately incorporate the tips in their daily lives, and (3) to make the information available to the widest possible audience.

Three information modules were developed. The "9 Steps to Safe Food Handling and Storage" explain how to handle

- foods safely from the supermarket to storing them in your refrigerator. "Cool Cooler Tips for Safer Picnicking" convey
- food safety tips for outdoor dining. And, "Turkey Traps and
- Tips for Cooking Holiday Meals," describe common food
- safety traps and ways to avoid them when preparing holiday
- meals.
- All three modules, as well as a "How Long Will it Keep?"
- Food Storage Chart, are made available to consumers in the
- brochure, "Food Safety: Practical, Easy Steps You Can Take
- to Help Keep Your Family Safe" (American Plastics Council,
- 1996), which is offered free to consumers through the
- American Plastics Council's toll-free information line. The
- brochure also is posted on the APC's web site at
- [www.plasticsresource.com](http://www.plasticsresource.com).
- The tips are conveyed to consumers through a three-
- pronged media effort featuring the registered dietitians who
- appear on television news programs and talk shows, are the
- featured guests on radio interviews and are quoted in print.
- Media outlets in major markets are targeted at seasonal times
- of the year, such as Memorial Day, the Fourth of July and
- Thanksgiving, when the education modules are most rel-
- evant to ensure the largest possible audience reach. Since the
- program's inception in March 1996, over 26 million con-
- sumers have heard and/or seen the tips.



## POSTER PRESENTATIONS



### Food Safety Advisor Volunteers Serve Washington

Virginia "Val" Hillers, PhD, RD and Jodi Trenda, RD of Washington State University, Department of Food Science and Human Nutrition, Pullman, WA 99164-6376

**Washington** residents need accurate scientific information to prevent foodborne illness and desire information about food safety issues. The Food Safety Advisor program was designed to train master volunteers in the areas of food handling and food preservation. The objective of the program is to multiply faculty efforts through use of trained volunteers.

A comprehensive Food Safety Advisor Handbook and supporting extension bulletins are distributed to every FSA volunteer. The Handbook is used for training, and also as a resource for answering questions from clientele.

After receiving 30 hours of training and passing the certification examination, Food Safety Advisor volunteers conduct food handling programs and staff telephone hotlines for their payback hours. Food Safety Advisor volunteers report significant positive changes in their personal food handling behaviors after receiving training in food protection.

More than 60,000 Washington residents have received information about safe food handling from the Food Safety Advisor volunteers. Examples of programming conducted by Food Safety Advisors (FSA) include the following:

In Yakima County, the Food Safety Advisors conducted workshops and trainings at on-site locations in restaurants, day care centers and foodservice regional meetings and also provided individual assistance for a variety of food handlers. In the first four months of volunteer service in 1996, these Advisors volunteered over 300 hours reaching 1160 quantity food handlers, including restaurant staff, developmentally disabled support staff, and personnel from churches, lodges, day-care centers and school foodservice. Pre- and post-tests at FSA programs were given to 770 participants and indicated 100 percent planned to change at least two of five food handling practices.

In Spokane County, 530 people received educational assistance by telephone with questions related to food safety and preservation. Two public workshops conducted by volunteers reached 100 people and Food Safety Advisors also staffed an information at the Spokane Interstate Fair.

The Food Safety Advisor Handbook and supporting materials will be displayed. Printed copies and disk copies of the Food Safety Advisor Handbook and teaching materials are available for purchase from Washington State University.

### Everybody's FOODSAFE Kitchen

Everybody's Kitchen Ventures, LTD. 100 Reid Rd., Salt Spring Island, BC V8K 2J8 Canada.

**A food safety book** for anyone interested in serving good wholesome food, to their family and friends with increased confidence in reduced likelihood of poisoning them. - Sheri Nielson, Everybody's Kitchen Ventures Ltd, Salt Spring Island, British Columbia, Canada 1996.

A significant portion of all foodborne illness can be attributed to unsanitary foodhandling practices. Clearly consumer education is essential to a positive outcome in the "war against foodborne illness". The existing literature consists of technical information, unsuitable for the average person, and condensed pamphlets which fail to address this subject in sufficient depth. Everybody's FOODSAFE Kitchen uniquely satisfies this middle ground.

Based on the internationally acclaimed FOODSAFE Training program, and drawing heavily on the expertise of the USDA, FDA and Health Canada; Everybody's FOODSAFE Kitchen is a valuable resource to any cook. Its 227 pages deliver a well organized, informative, and comprehensive treatment of food safety issues and practices, while remaining readable and entertaining. The text is supported by effective graphics, a comprehensive index and a technical glossary.

Although Everybody's FOODSAFE Kitchen targets the lay consumer, it will also effectively serve as a reference and effective extension tool for foodservice workers in any setting including health care professionals, food protection officials and educators alike.

**e. mail to [ekv@saltspring.com](mailto:ekv@saltspring.com)**

**website: [www.saltspring.com/ekv](http://www.saltspring.com/ekv)**





## Associations between food safety beliefs, self-reported behaviors, knowledge and observed hamburger patty handling and cooking

Jodi Bunde Trenda, RD and Virginia "Val" Hillers, PhD, RD of Washington State University, Department of Food Science and Human Nutrition, Pullman, WA 99164-6376

**A preliminary study** was conducted to develop and validate a food safety survey to assess whether the Health Belief Model and the Locus of Control were useful models to examine food handling attitudes and self-reported behaviors regarding the cooking of hamburger patties. The Health Belief Model attempts to explain why, in the absence of overt symptoms of illness, people engage in behavior to protect their health. The basic feature of the model is that two sets of beliefs provide motivation for people to engage in health behaviors. One set is related to a person's perceived susceptibility to disease and the benefits of taking preventive actions. The other set is related to the barriers (lack of time, bothersome, traditional risky practices/recipes, lack of knowledge, monetary cost) that impede preventive actions. The Locus of Control theory is based on the premise that individuals perceive attainment of a behavioral outcome such as prevention of foodborne illness as being within (internal) or outside (external) their control. An internal locus of control is related to a person's belief that they are personally responsible for their own outcome. Individuals with an external locus of control believe that an outcome is outside one's own control and the result of other persons more powerful than oneself (the government or food processors) or a result of luck.

The 109-question survey was given to 51 subjects recruited from the Pullman, WA area. Thirty female and 21 male subjects with an average age of 33.7 years participated. Most subjects had two to four years of college. In addition to the written questionnaire, the participants' actual behaviors regarding cooking of hamburger patties, food handling, and sanitation were observed.

- Each subject cooked 3 hamburger patties to their preferred degree of doneness. Final cooking temperatures were measured using a thermocouple thermometer. Cooking procedures, cutting into the patty to check for doneness, and handwashing tendencies were noted for each participant.
- Each subject's fingertips and counter top working areas were touched to Rodac surface plates to determine bacteria counts.
- Factor analysis was used to determine associations. Subjects who had a strong belief that the government and food processors were in control of food safety (powerful others locus of control) were more likely to trust that the government could satisfactorily regulate food safety and believed that taking food safety precautions at home was time consuming and bothersome. They tended to avoid raw fish and eggs and they felt little internal control in the safety of food.
- The subjects who scored high in the belief that they were in control of food safety (internal locus of control) were more likely to eat rare hamburger, more likely to disagree with recommendations to avoid undercooked hamburger, and placed less trust in the government and food processors. They tended to be willing to use risky recipes and found it inconvenient to change risky food handling practices. Both are potential barriers to food safety.
- Subjects who cooked their patties to 155oF or higher were more likely to report never or rarely eating rare hamburger and avoided other food handling risks.
- These results are exploratory. Additional research in this area is needed to enable educators to target messages to audiences with varying levels of self-efficacy, health motivation, and readiness.





## Evaluation of Food Safety and Sanitation for School Food Service Staff: ASSESSING KNOWLEDGE AND BEHAVIOR

Claudia G. Green, PhD, RD, LDN and Jeffrey Frame, MS, RD Department of Food, Nutrition, and Food Service Management, University of North Carolina Greensboro, Stone Building, Greensboro, North Carolina 27412

***School food service program staff*** serve over 25 million meals per day to children grades K-12 in the United States. Because it is critical for the successful and safe service of food, food safety and sanitation training of food production staff is a responsibility that requires ongoing commitment. Many national and state level organizations have adopted food safety and sanitation certification programs to assure a specific level of confidence in the safe handling of food. Certification may require attendance at training sessions or attendance plus a certification exam.

North Carolina Child Nutrition Programs contracted with the University of North Carolina Greensboro to develop a food safety and sanitation manual called "Recipes for Safety". This is a 15 hour certification program that requires that participants pass a certification exam upon completion of the curriculum in order to receive a certificate. Over 2000 North Carolina school food service staff have received certification in the last 10 months.

The purpose of this research project was to evaluate the food safety and sanitation knowledge and behavior changes in Child Nutrition staff who received training. To evaluate knowledge, we recorded the scores of staff taking the certification exam immediately following the training and the scores of the same staff who repeated the certification exam

- 5 months following the training.
- To evaluate behavioral change, we observed Child Nutrition staff in food production activities prior to the "Recipes for Safety" training as well as 5 months after the training. Using statistical analysis, we determined if there was a significant difference in the measures of knowledge and behavior.
- The results of this study indicate that there is a need to customize food safety and sanitation training to the needs of the population being trained. Consideration should be given to incorporation of strategies for training adult learners such
  - providing opportunities for active involvement of participants in the learning process
  - use of a variety of training methods
  - use of relevant case study situations
  - presentation of scenarios that require creative problem solving skills; and
  - development of a clear sense of purpose supporting regular training in food safety and sanitation.
- Results from a recent survey of training Child Nutrition staff shows that more emphasis must be placed on training front line employee and less on training administrators who may not have time to provide training to all their staff on an on-going basis.



## POSTER PRESENTATIONS



### Foodsafe: Food Safety Training for Everyone

Marlee Loiselle; Greater Victoria Foodsafe Council,  
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***The prevention of foodborne illness*** requires knowledge of sanitary food handling practices by both producers and consumers. FOODSAFE is an innovative flexible program that provides food training suitable for both professional food handlers and consumers.

Conventional food safety training, designed for the professional food handler, often lacks the flexibility, to adapt the program to consumers such as families, volunteers, nannies, kids at risk groups, service clubs and special need groups.

The program has been even more successful than even the original developers had envisioned. In British Columbia's Capital Regional District 30,000 of the areas 300,000 population have earned level 1 certificates since the implementation of the FOODSAFE program. Many more residents have benefited indirectly. FOODSAFE has spawned food safety tips in local publications, air time on the local TV stations, a video for grade school children on safe lunch making etc.

The program is available in local schools at night, recreation centers, continuing education centers, and community colleges. It can also be delivered to your home or taken by correspondence. A significant breakthrough was reached when FOODSAFE Level 1 (basic), became available in many of the area's high schools. The high school students have been bringing this knowledge home which frequently encourages mom/dad to also take the course.

FOODSAFE level 1 is the cornerstone of complete program that can take participants through advanced training leading to the implementation of a HACCP plan. Because FOODSAFE level 1 knowledge is shared by both consumers and entry level, food service workers safe food handling is practiced homes and demanded in the restaurants.

### Modifying Youth and Adult Food Handler Behavior Using Interactive Computer Resources

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***Training youth*** in safe food handling techniques can result in life-long behavior that reduces the risk of foodborne disease. Training adults in safe food practices presents a much more challenging situation, especially when established in safe practices must be modified. Special emphasis must be placed on safe handling practices for individuals in high-risk categories where foodborne infections can result in serious morbidity and mortality. Since 1991, the University of Florida through CSREES-USDA funding, has designed and testing food safety training resources for persons at greatest risk for serious foodborne disease, school-aged youth, and adult food handlers. We will present information showing that videos and booklets can effectively increase safe food handler knowledge and behavior for high-risk populations, including infants, and persons with cancer and AIDS. Interactive CDROM food safety software designed for school-aged youth (Let's Have a Killer Cookout...Not!) proved to be an excellent medium for teaching food safety principles while maintaining the interest of the pupil. A 30% increase in safe food handling behavior was demonstrated for adults using an interactive CDROM training program (The Food Handler Sanitation Interactive). We conclude that interactive computer software is an effective tool for increasing safe food handling knowledge and behavior, and that its availability should be enhanced in schools and the home.





## Food Safety Education THROUGH THE DESIGN AND IMPLEMENTATION OF AN INTERACTIVE FOOD SAFETY INFORMATION RETRIEVAL SYSTEM ON THE WORLD WIDE WEB.

Melissa C. Taylor, Dr. Pat Curtis. North Carolina State University Department of Food Science, Raleigh, NC 27695.

### **Summary:**

Safety of the food supply is a shared responsibility. Food Producers, processors, handlers and consumers must all follow appropriate food safety procedures. Food must enter and leave their portion of the food supply chain safe for human consumption. Consumers deserve a safe food supply delivered in such a manner that they can determine it meets their nutritional quality needs.

Extension's role in education is to improve the ability of people to make informed and responsible decisions with a full understanding of the risks and benefits of food system technologies. Information on the safety of the food supply is sometimes conflicting and confusing. This may lead to consumer mistrust and lack of confidence. Food safety issues are complex. They require some understanding of the whole food production system and the sciences employed in food production. Communicating risk versus benefit analysis adds even more challenge to the educator.

This interactive information system will give the user immediate access to more interdisciplinary expertise on numerous food safety issues. Extension agents with food safety responsibilities often need access to specialists in a relatively short period of time. This project will draw expertise from various specialty areas such as food science, microbiology,

toxicology, chemistry, animal science, poultry science, crop science, communications, computer technology, etc. Upon completion of the project the computer information system will be available to anyone with access to the World Wide Web.

### **Goal:**

Provide agents with an interactive computer information system to answer food safety questions.

### **Objectives:**

1. Design and develop an interactive computer information system for answering food safety related questions.
2. Place the food safety information system on the World Wide Web and use selected extension agents to pilot the test program.
3. Evaluate the effectiveness of the system for agents in answering food safety-related questions.

This system will be repeatedly tested during developmental stages to determine effectiveness as well as user-friendliness. A basic evaluation tool will be developed to evaluate the above mentioned characteristics. Once the system is available to additional users, selected users will be asked to further evaluate its usefulness and user friendliness. The design of the program will also allow for users to make suggestions regarding additional topics they would like to see included in the resource tool.





## Microbiological Quality of Vended Drinking Water Stored in Homes in the Lower Rio Grande Valley

Charlotte A. Cottrill, Ph.D., Maurice R. Berry, Ph.D., and Hall Zenick, Ph.D. U.S. Environmental Protection Agency Office of Research and Development; Gerry Oakland, M.S., Research Triangle Institute

### **Background**

The U.S. Environmental Protection Agency (EPA), working with the U.S. Department of Health and Human Services/Public Health Service, and the State of Texas initiated in the Lower Rio Grande Valley Environmental Study (LRGVES) because of community concerns about the potential adverse health effects from environmental pollutants and the lack of local environmental information. The scope and design of the LRGVES were developed in collaboration with community leaders, and representatives of several state and federal agencies. Residents in the Lower Rio Grande Valley (the Valley) were concerned about many potential sources of pollution, including cross-border emissions from industry, agricultural pesticide use, waste burning, and inadequate water and sewage facilities in rural colonies. Due to the lack of information on the extent or sources of exposure faced by local residents, it was difficult to evaluate the relationship between local pollutant levels and health effects. Such information was key to addressing community concerns, identifying potential effects, and formulating effective mitigation strategies.

### **Lower Rio Grande Valley Environmental Monitoring Study (LRGVEMS)**

The LRGVEMS was designed to investigate the potential pathways of human exposure to environmental contaminants in the Valley. The pilot project which was conducted during the Spring and Summer of 1993 included a fixed site air monitoring component and a residential monitoring component. This discussion is limited to the sampling and analy-

sis of household waters available for drinking and the reporting of the results to study participants and other residents in the Valley.

Drinking water and household water samples were collected along with food and beverage samples. Water samples were analyzed for microbiological quality and chemical residues including anions.

### **Results and Discussion**

Tap water samples from public water supplies were high in chloride and sulfate anions, often related to poor odor, color, or taste. Possibly because of this, many residents of the Valley purchased water for drinking at local vending machines and stored the water in their homes in a variety of containers. Microbiological contamination of these containers was found to be a potential health problem. Coliform levels exceeding federal criteria for public water supplies were found in the water stored in containers that were regularly disinfected. Water sampling in the LRGVEMS pilot project identified the need for intervention and educational programs to eliminate these exposure of Valley residents.

Investigators, community leaders and residents who had collaborated on the planning and conduct of the pilot study, all agreed on the importance of communicating the study findings to the participants, community leaders, and other interested residents in the Valley. A detailed communication strategy was developed to make the findings available and understandable to all segments of the community. The strategy also focused on how community leaders and individual residents could reduce the exposures identified.





## POSTER PRESENTATIONS



### Assistant Secretary Moreno

*U.S. Department of Education*

“Food safety is an example of federal agencies working together for public health, especially that of our children.”

### Lead Deputy Commissioner Michael Friedman

*Food and Drug Administration*

“Comprehensively we must do more in the nation’s kitchens to ensure the safety of the foods we feed our families.”

“We need to continue the quest to protect the nation’s health.”

